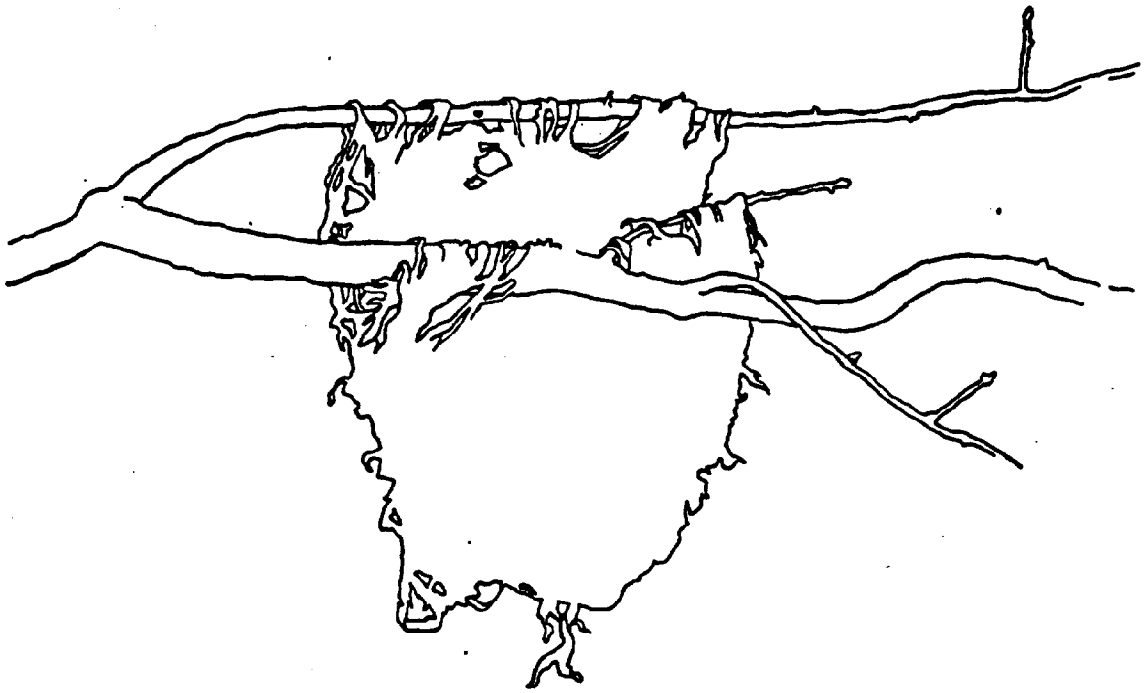
APPENDIX F

HABITAT ASSESSMENT MANUAL



ANNE ARUNDEL COUNTY

Office of Planning and Zoning

Environmental and Special Projects Division

Nancy L. Matthews

August 1987

Preparation of this report was partially funded by:

The Office of Coastal Resources Management
of the National Oceanic and
Atmospheric Administration

and

The State of Maryland Chesapeake Bay
Critical Area Commission

ACKNOWLEDGEMENTS

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Joanna L. Garbisch, Vice-President, permission to use pamphlets

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TABLE OF CONTENTS

Chapter		
	Introduction	i
1	Habitat Assessment Methodology	
	Pre-field Review	1
	Field Investigations	3
	Office Review	4
	Example	6
2	Inventory Forms	
	Woodland Site	27
	Old Field Site	30
	Wetland Site	33
	Glossary	37
	Field Guides and Equipment	40
	References	41
3	Anne Arundel County Species	
	Birds	43
	Mammals	74
	Reptiles	83
	Amphibians	92
	References	99
4	Wildlife Plant Food Species	
	Trees	100
	Shrubs	106
	Vines	108
	Herbaceous Plants	109
	Marsh and Aquatic Plants	113
5	Miscellaneous Plant Lists	
	Hedgerow Plants for Food and Cover	115
	Winter Fruits and Seeds	116
	Disturbance Indicators	117
	Wetland indicators	120
6	Rare and Endangered Species	122
7	Shrubs and Trees for Wildlife Habitat Development (Environmental Concern, Inc.)	125
8	Plants for Landscaping Shore, Ponds and Other Wet Areas (Environmental Concern, Inc.)	132

INTRODUCTION

The Chesapeake Bay Critical Area Protection Program was passed in 1984 because of concern about the decline of the Chesapeake Bay. The Chesapeake Bay Critical Area Commission (CAC) was established to develop criteria to guide local jurisdictions in developing programs for their Critical Area (1000' zone around the Bay and its tributaries).

The Critical Area Act requires that protection be given to wildlife and plant habitats "which are of particular significance . . . owing to their uniqueness, rarity, or likely diminution in the future, and which are not already protected or addressed by other existing programs." These habitats include:

Colonial water bird nesting areas and historic waterfowl staging and concentration areas

Riparian forests, i.e., forested areas of 300' in width along streams and the Bay's shoreline

Relatively undisturbed, large forest patches (of 100 acres or more) which support breeding populations of forest interior dwelling birds, e.g., vireos, warblers, flycatchers, woodpeckers

Nontidal wetlands

Certain plant and animal communities which are the best examples of their kind in Maryland

Habitats for species that are threatened, endangered, or in need of conservation

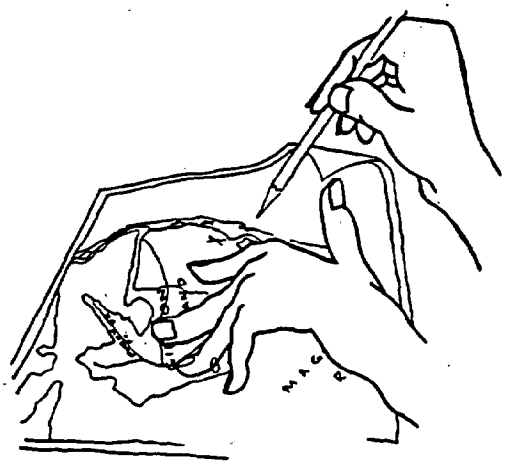
Other areas determined to be of local significance

The purpose of this Habitat Assessment Manual is to aid the user in identifying and evaluating habitat areas including but not limited to those designated by the CAC as ones to be protected. The Manual contains a methodology which is designed to be used as a tool to inventory habitats both within the Critical Area and elsewhere. Evaluation of wildlife habitats will be included in project site reviews of areas scheduled for development. The inventory and evaluation will be used to determine the minimum areas that must be maintained on a project site.

The Habitat Assessment Manual is designed to provide information for both the evaluation and enhancement of wildlife habitats. The assessment methodology and field inventory forms are followed by lists of the County's wildlife species and their habitat requirements. The Manual also contains lists of County plant species and the wildlife that use them as food sources or cover, as well as other plant lists of value to developers, consultants, and property owners.

CHAPTER 1

HABITAT ASSESSMENT METHODOLOGY



PRE-FIELD REVIEW

FIELD INVESTIGATION

OFFICE REVIEW

Habitat Assessment Methodology

The purpose of the Habitat Assessment Methodology is to provide a means for inventorying habitats in the Critical Area of the County, that is, to determine what types of plant and wildlife habitats exist in the county and which wildlife species are using specific habitats so that measures can be taken to protect the plants and wildlife and their habitats from development impacts. The assessment methodology will become part of the subdivision review process and will enable the County to keep track of what plant and wildlife habitats are being impacted, and possibly lost, due to development. The methodology is threefold: (1) Pre-field Review, (2) Field Investigation, (3) Office Review.

Pre-field Review

The pre-field review includes reviewing aerial photographs of the site to determine such items as what types of vegetation are expected to be found, sources of water for the area, percent of forest cover, etc. Notes on these findings should be kept with other site information. Appropriate maps, e.g., topographic, land-use, wetland, soils, forest type, rare and endangered species, should be checked and the information transferred to a base map to be used in the field work, for example, a 1"=200' scale topographic map. After the information from several maps has been transferred to the base map, specific areas for the field investigation can be designated, e.g., forested areas, wetlands, or rare and endangered species sites.

The following list of information sources should be consulted.

Existing treeline	aerial photos - developer or Office of Planning and Zoning
Floodplains	
(a) Coastal	FEMA 600' scale maps - Office of Planning and Zoning For individual maps call 897-5900 in Bethesda or 1-800-638-6620
(b) Nontidal	FEMA 600' scale maps - Office of Planning and Zoning For individual maps call 897-5900 in Bethesda or 1-800-638-6620
	Subdivision plats - Office of Planning and Zoning

	Tax maps - Office of Planning and Zoning Maryland Department of Assessments and Taxation
Wetlands	
(a) Tidal	200' scale maps (photo base) Office of Planning and Zoning Anne Arundel County Courthouse Plat Room, DNR
(b) Nontidal	2000' scale maps (USGS quad base) Available at $23.00 per 15 sheet set from Planning and Zoning, or $2.00 per sheet
(c) Submerged Aquatic Vegetation	As above
Bodies of water	
(a) Permanent	200' scale topo maps Aerial photos USGS quad sheets
(b) Intermittent	As above
(c) Tidal limit	Wetlands maps as referenced earlier Vegetation
(d) Mean high water line	Field topo Tide tables, East Coast of North & South America, NOS
Aquatic habitat	
(a) Spawning area	Aquatic Sensitive Areas Handbook DNR/Coastal Resources, 1977 DNR/Fisheries Division of Tidewater Administration, 269-3061
(b) Nursery areas	As above
(c) Shellfish beds	DNR/Hydrographic Survey Maps Oyster bars and clam areas, 269-3436 DNR/Fisheries Division As above

Soil types	Soil Survey of Anne Arundel County Maryland, USDA and SCS, February, 1973
	Borings by developer
Steep slopes	Topo maps, shaded if greater than 15%
Upland Natural Areas Boundary	1" = 1 mile scale map Planning and Zoning Computer printout Planning and Zoning and DNR
Area of Critical State Concern	Maryland Areas of Critical State Concern: Designation Report Maryland Department of State Planning, January 1981
Chesapeake Bay Critical Area (1000')	Planning and Zoning
Rare or endangered species habitat	DNR/Natural Heritage and Environmental Review, 269-3656

Field Investigations

The field investigation is an overall reconnaissance of the site for both inventorying purposes and project site review. Following this narrative are standard forms that can be used for doing site evaluations. Determining how many inventories to do per site is dependent upon the information collected in the office review. Typical areas, e.g., large forested areas and old fields, should be evaluated to get a general idea of the habitats at the site. Specific areas, such as wetlands or rare and endangered species locations, should be evaluated. Transition areas, e.g., along waterways or between fields and woodlands, should be examined because they are often areas of great habitat diversity due to the fact they have some qualities of two habitat types.

There are three sets of field sheets to use when doing an inventory of a site: Woodland, Old Field, and Wetland Site inventory forms. The Woodland Site Inventory is applicable for forested sites, even if the site is not completely forested. The Old Field Site Inventory is applicable not only to idle or abandoned fields, but also to utility right-of-ways and pastureland. Wetland Site Inventory forms are used in conjunction with either of the other two if necessary, or by themselves.

The field sheets for all types of sites are designed to be filled out as the reviewer "walks through" the area (after the pre-field review has been done.) Many of the questions asked are for estimates only; others are to be answered in more detail. It is important that separate forms be filled out for each different community.

Office Review

The next step is a review of all the information gathered during the pre-field review and field investigations. The final task is to write an evaluation and narrative of the site, which should include the following information:

1. Rare and endangered plants, giving scientific and common name.

2. Rare and endangered animals, giving scientific and common name.

3. Description and extent of vegetation within the Critical Area boundary. Specify the vegetative communities present on the site and give their areas. Examples include: mature woodland, immature woodland, old field, pasture, cropland, orchard, and wetland. For each community, please describe the vegetation in the following manner:

   a) Canopy (highest layer of trees)

      i) Common species present, indicating approximate percentage of total,

      ii) Diameter at breast height - give general range for each species listed,

   b) Understory (immature trees below canopy)

      i) Common species present, indicating approximate percentage of total,

   c) Shrub layer (woody plants below trees)

      i) Common species present, indicating approximate percentage of total,

   d) Herbaceous layer (non-woody plants below shrubs)

      i) Common species present, indicating approximate percentage of total.

4. Species of animals observed or expected to be present, based on habitat or other evidence.

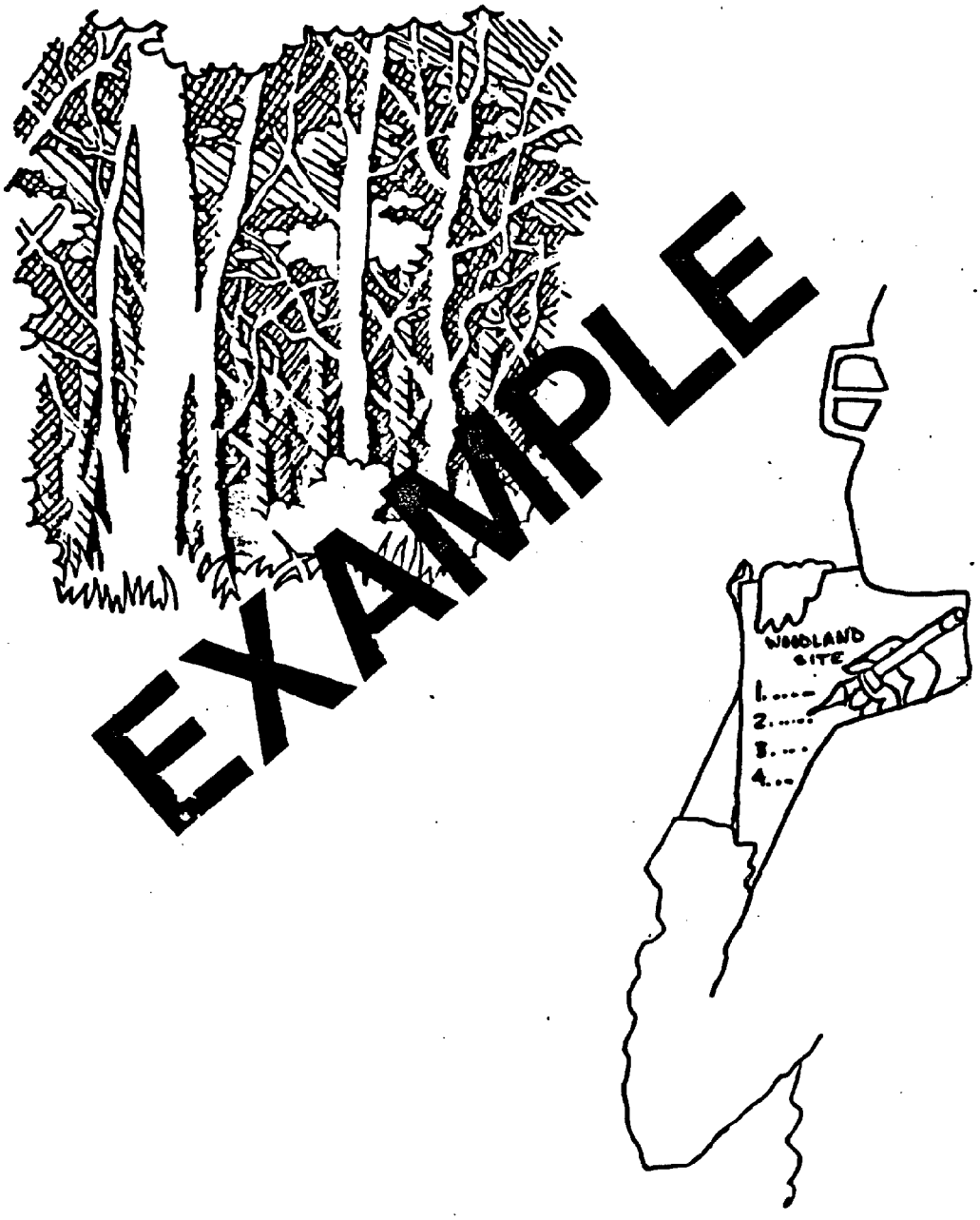
5. Infiltration potential for stormwater, based on soil type and depth to ground water.

6. Pollutants expected to be generated by development and measures that will be taken to reduce their impact.

7. Proposed stormwater management plan to minimize degradation of water quality.

8. Shoreline condition and any proposed work at or beyond the natural shoreline.

9. Dates of field work.


EXAMPLE
WOODLAND SITE
1.
2.
3.
4.

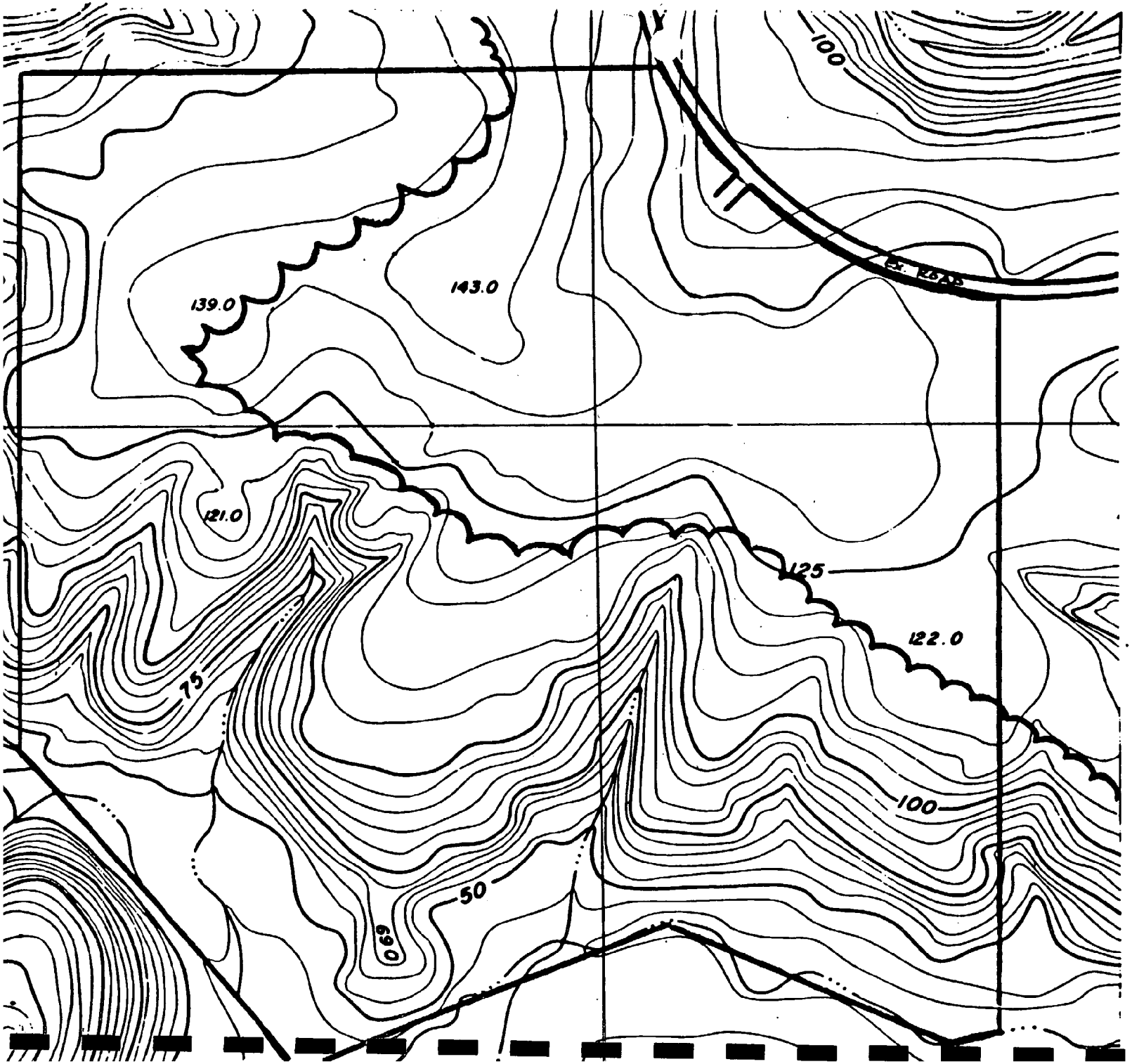
The purpose of this example is to explain the steps involved in doing a habitat assessment and applying the information to the subdivision process.

Pages 8 through 10 show the type of information gathered during the Pre-Field Review. Notes can be made both on the topographic map and separately so the reviewer can start planning areas to inventory. The existing treeline indicates there are forested and nonforested areas; the intermittent stream indicates there may be nontidal wetlands.

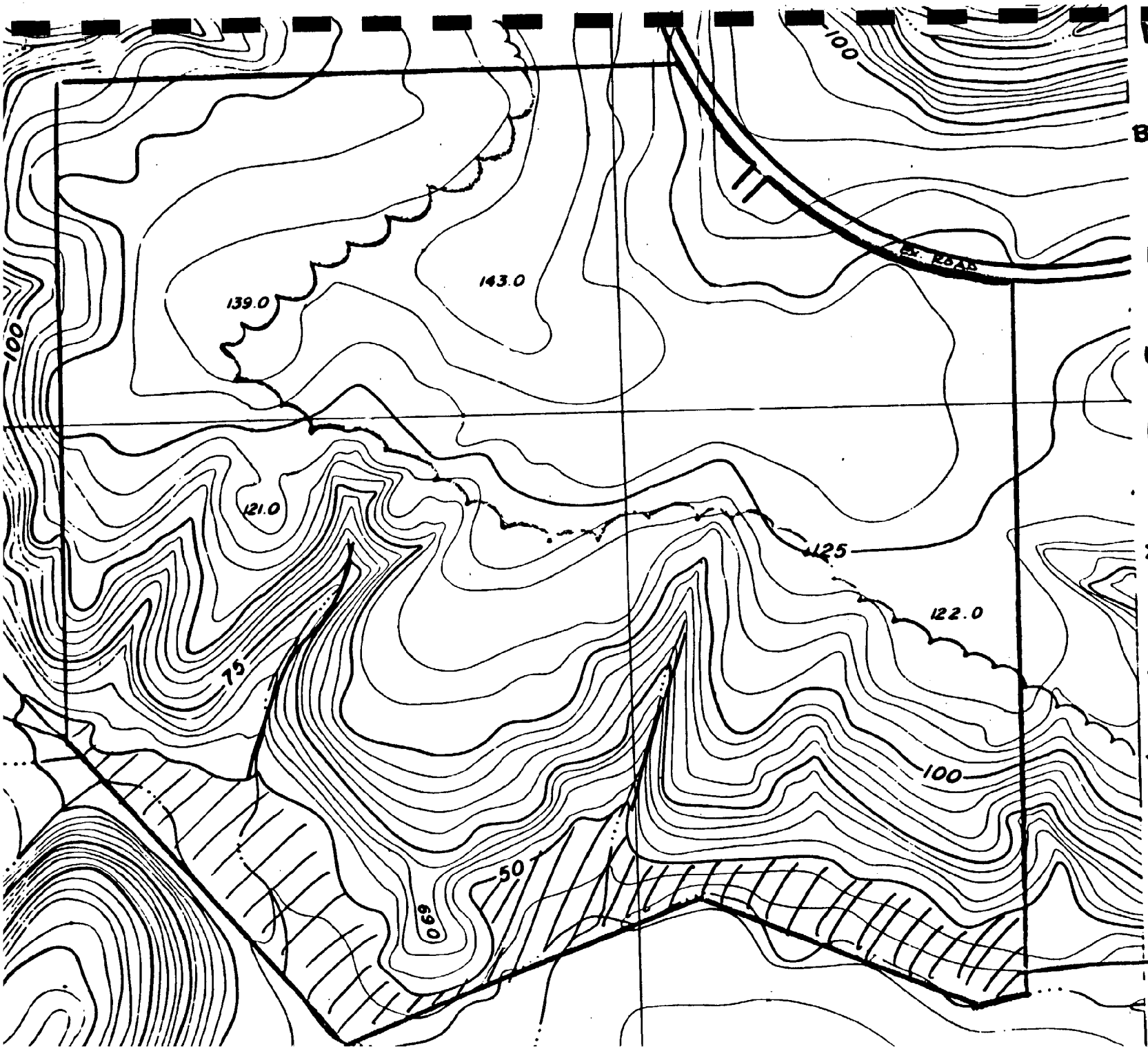
Pages 11 through 20 are completed sets of field sheets and provide the bulk of the information gathered during the Field Investigation. The following pages (21-24) are additional tables and notes compiled from the site visit.

The Office Review is the beginning of the most difficult part of the assessment. First, generalized notes can be made indicting sensitive areas of the site or areas with building constraints (e.g., steep slopes). A sketch map (page 26) showing the sensitive areas can be drawn and buildable sections delineated.

The final step, not shown in this example, is the completed assessment report and actual proposed development.



existing site


Pre-field Review P.1
BEECH HILL
no floodplain
no SAV
intermittent stream
no Rte special
no UNA
steep slopes ~ 100' contour
soil type — see attach
ex. tree line
non-tidal wetland
scale 1" = 200'
100
143.0
139.0
121.0
125
122.0
75
100
50
690

SOILS

CoB2 - upland area - only slight limitations
moderate K factor (K=.32)
moderate - low run off potential
low → moderate shrink/swell, frost action

CoD2 - steep slopes - no disturbance allowed

Mt - mixed alluvial - nontidal wetlands

CoB2 - Collington fine sandy loam
2-5 % slopes
moderately eroded

CoD2 - Coll. fine sandy loam
10-15 % slopes
moderately eroded

WOODLAND SITE INVENTORY

EXAMPLE

SITE: DATE:

OBSERVERS: AERIAL PHOTO #:

PROJECT NAME:

SUBDIVISION NUMBER: PROJECT NUMBER:

TAX MAP (S): BLOCK(S): PARCEL(S):

1. List overstory trees, indicate (*) most abundant species:
*beech Virginia pine white oak
tulip poplar *chestnut oak
2. Approximate percent closed canopy (circle one):

(70% + closure) 10 - 39% closure

40 - 69% closure 0 - 9% closure

3. Average diameter at breast height (4.5') of overstory trees representative of the diversity (in inches).
14-18" some beech much larger
4. Percent of overstory trees in hard mast (i.e. oak, hickory, walnut, beech).
85%
5. Percent of overstory trees in soft mast (i.e. pines, sweet gum, maple, tulip, black gum).
10%
6. Percent of overstory non-deciduous trees (i.e. pines, hollies, cedars).
5%
7. Trees with cavities present (circle one). (Yes) No
8. Standing dead wood (snags) or partially dead trees present (circle one).

(Yes) No

9. Abundance of understory vegetation - high shrubs to tree growth of shade tolerant species (circle one).

none — (moderately abundant) — sparse — dense

10. List understory trees (* most abundant species):

* dogwood sassafras
black locust

11. Estimate percent of understory non-deciduous trees.

---

12. Shrub layer species - woody vegetation <6' high (circle one).

a. wide variety of species, LIST:
(b) three species dominate, LIST: lowbush blueberry, mountain laurel, Japanese honeysuckle
c. two species dominate, LIST:
d. one species dominates:

13. Herbaceous layer - non-woody vegetation <3' high (circle one).

a. grasses, sedges, and rushes dominate
b. wide variety of grasses, sedges, rushes, and forbs (broad-leaved herbaceous plants), LIST: spotted wintergreen, mayapple, hayscented fern, Christmas fern, partridge berry
(c.) grasses and forbs dominate, LIST:

14. Small animal dens (i.e. mouse, snake) sighted. (Yes) No

15. Large animal dens (i.e. rabbit, fox) sighted. (Yes) No

16. Bird or squirrel nests sighted. (Yes) No

17. Animal trails (i.e. deer) sighted. (Yes) No

18. Type of ground litter (circle one):

a. bare ground, no litter
b. mostly leaf litter
(c.) thick leaf litter with <25% logs and sticks
d. thick leaf litter with 25 -50% logs and sticks

19. Texture of soil (circle one):

(a.) sandy
b. loamy
c. silty
d. clayey

20. Soil moisture (circle one)

(a.) dry
b. moist
c. saturated (little or no surface water)
d. inundated (surface water present)

21. Birds, mammals, reptiles, and amphibians sighted.

box turtle
black racer
gray squirrel
chipmunk
Cardinals
heard woodpeckers
Chickadee
cooper's hawk overhead
flicker

22. Miscellaneous comments (i.e. unique features, unique vegetation, transition zones, etc.)

many large beeches

OLD FIELD SITE INVENTORY

SITE: DATE:

OBSERVERS: #:

PROJECT NAME:

SUBDIVISION NAME: PROJECT NUMBER:

TAX MAP(S): BLOCK(S): PARCEL(S):

1. Dominant seral stage (developmental stage) of the community (circle one):

   a. native annuals

   b. perennials, annual grasses, forbs (broad-leaved herbaceous plants)

   (c) herbaceous perennials, few annuals, up to 5% woody vegetation

   d. 25-50% briars, shrubs, small trees

   e. 51-75% woody

   f. >75% woody

   g. introduced species (monoculture)

2. Arrangement of plant subcommunities or seral stages (circle one).

   a. uniform - physically distinct communities, no intrusion of one into another

   b. moderately uniform

   (c) scattered - difficult to distinguish separate communities, much intrusions of one into another

3. Estimate number of herbaceous species. List the common species.

   8-10 broomsedge bush clover
   white aster goldenrod
   lespedeza

4. Estimate number of woody species. List the common species.
2-4 young pines Some vines
many small oaks

5. Percent of ground surface covered by vegetation >1' high. 5%

6. Height of dominant herbaceous vegetation (in inches). 18-20"

7. Ground dens present. (Circle one). Yes ~~No~~ none seen

8. Texture of soil:

(a) sandy c. silty

b. loamy d. clayey

9. Factors affecting soil moisture (circle one):

a. recent rainfall(date: / /)

b. drought conditions

c. proximity to water bodies

10,11,12. External edge is defined as a transition zone. If the interface between two habitat types has no transition zone, do not evaluate characteristics 10, 11, 12.

10. External edge between habitats (circle one): transition zone almost nonexistent - field directly abuts woodland

a. scarcely vegetated

b. moderately vegetated

c. densely vegetated

11. Shape of external edge between habitat types (circle one):

a. straight

b. slightly irregular

c. highly irregular

12. Average width (in feet of external edge between habitat types.

13. If managed, what is the species composition (circle one): N/A

a. grass

b. 50% grass, 50% legume (bean, pea, or related plant bearing pods that split in two when mature)

c. legume

14. Management (circle one):

(a) no management

b. mowed regularly

c. mowed annually

d. lightly grazed pastureland

e. moderately grazed pastureland

f. severely grazed pastureland

15. Birds, mammals, reptiles, and amphibians sighted.

mouse (meadow?)
black vulture
quail (4)
field sparrow
cardinal
garter snake (?)

16. Miscellaneous comments (unique features, unique vegetation, etc.)

- field is undergoing natural succession - some small trees are found throughout
- trails (animal) leave wooded area and enter field indicating use of the field by wildlife
- small animal trails run throughout the field

WETLAND SITE INVENTORY

SITE: DATE:

OBSERVERS: [illegible] #:

PROJECT NAME:

SUBDIVISION [illegible]: PROJECT NUMBER:

TAX MAP(S): BLOCK(S): PARCEL(S):

1. National Wetland Inventory quadrangle name and mapping unit (e.g., Deale quad, PFo1A)

   quad _____

   unit PFO1A

2. Soil survey sheet number and mapping unit (e.g., 17, RuB2)

   map # _____

   unit CoB2, CoD2, Mt

3. Wetland system (based on Cowardin, circle one):

   a. estuarine - tidal habitats and adjacent tidal wetlands

   b. riverine - wetlands and deepwater habitats within a channel

   (c.) palustrine - nontidal wetlands, e.g., marsh, swamp, bog

4. Wetland subsystem (circle one):

   a. tidal - water flow is under tidal influence

   b. perennial - no tidal influence, some water flows throughout the year

   (c.) intermittent - nontidal, water flows only part of the year

5. List overstory trees present, indicate (*) most abundant species:
*blackgum *willow oak silver maple
sweetgum swamp white oak *river birch

6. List understory trees present, indicate (*) most abundant species:
*sweetbay magnolia ironwood
*red maple holly

7. Shrub layer species - woody vegetation <6' high (circle one):

a. wide variety of species, LIST: sweet pepperbush
(b) three species dominate, LIST: highbush blueberry
c. two species dominate, LIST: southern arrow wood
d. one species dominates:

8. Herbaceous layer - nonwoody vegetation <3' high (circle one):

a. grasses, sedges, and rushes dominate jewelweed
(b.) wide variety of grasses, sedges, rushes, and forbs (broad-leaved herbaceous plants), LIST: sedges asters
c. grasses and forbs dominate, LIST: sensitive fern royal fern skunk cabbage

9. Wetland indicators when water is absent (circle all appropriate):

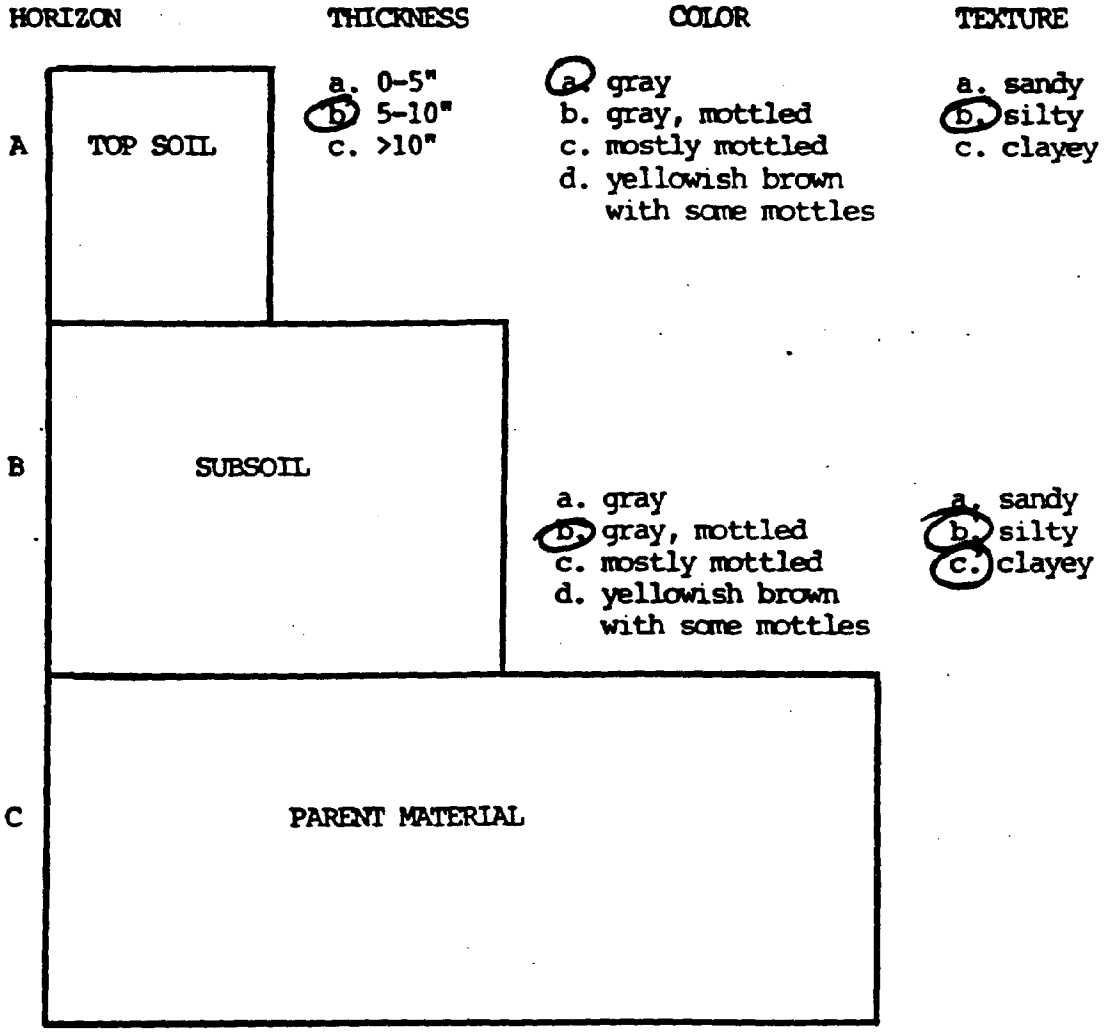
(a.) water stains on tree trunks
b. thin layer of sediment on leaf litter deposited by flooding
c. absence of herbaceous (and possibly shrub) layer
d. water stained (gray to black) leaves in the ground cover
(e.) swollen tree trunks at the bases (buttresses)
(f.) moss/sedge hummocks (small elevated areas)
g. exposed tree roots
h. patches of sphagnum moss present

10. Position in the landscape (e.g. depression, swale, ditch, etc.)
swale, stream channel

11. Is there an organic layer (i.e. peat) present on the soil surface? If so, how deep is it (in inches)?

yes ~4-6"

12. Soil profile information (circle appropriate letter in each column).



13. Drainage class (see illustration, circle one):

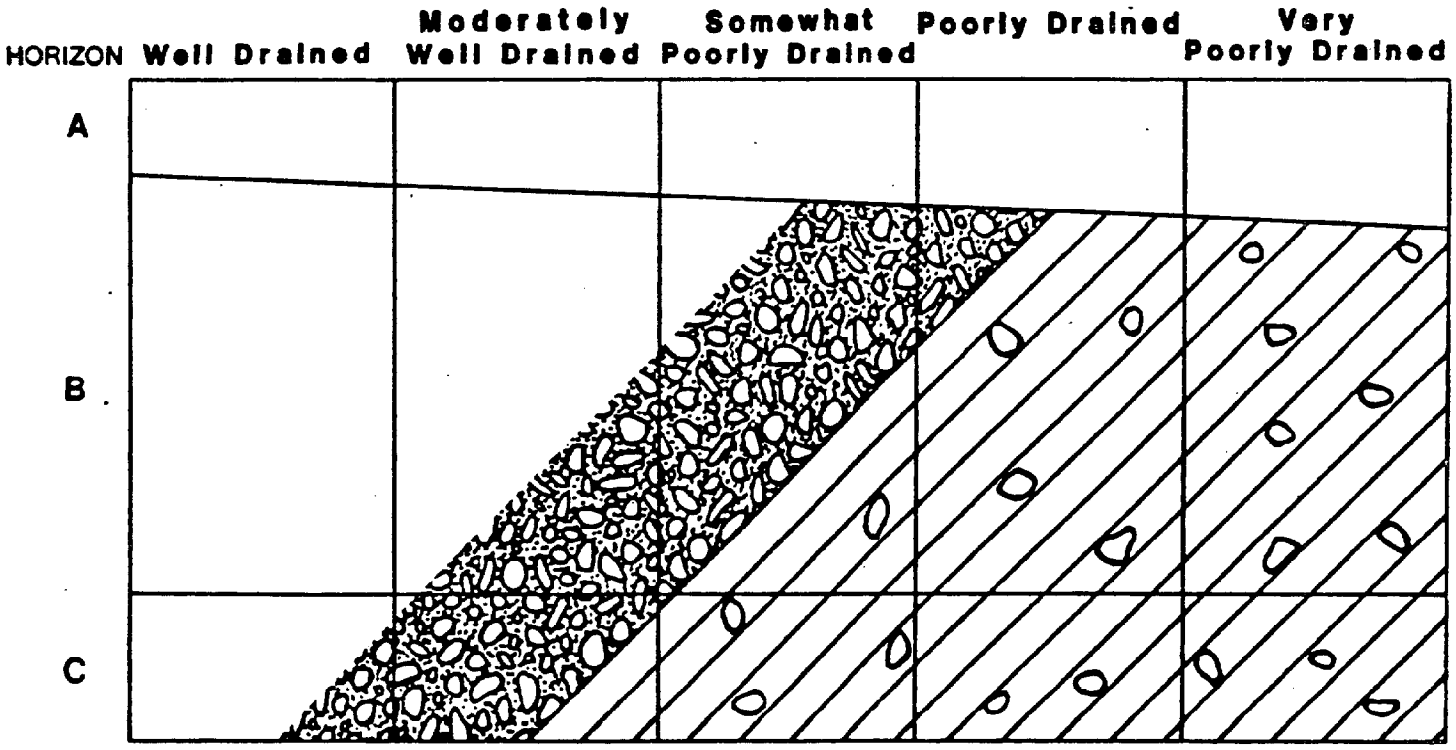
a. well-drained

b. moderately well-drained

(c) somewhat poorly drained

d. poorly drained

e. very poorly drained



mottles - irregular spots of different size and color indicative of poor drainage

greying - chemical reduction of anaerobic soils resulting in gray-green coloration

The A horizon thickens as the soil has poorer drainage.

NOTE: The proportions of the profiles are relative, not exact.

VEGETATION

	nontidal wetlands	woodlands	old field
OVERSTORY	blackgum	beech	
	sweetgum	tulip poplar	(young pines)
	willow oak	Virginia pine	(small oaks)
	swamp white oak	chestnut oak	
	silver maple	white oak	
	river birch		
UNDERSTORY	sweetbay magnolia	dogwood	
	red maple	black locust	
	ironwood	small sassafras	
	holly		
SHRUB	sweet pepperbush	lowbush blueberry	Va. creeper
	highbush blueberry	mountain laurel	trumpet creeper
	southern arrowwood	Jap. honeysuckle	poison ivy
HERBACEOUS	jewelweed	spotted wintergreen	broomsedge
	sedges	mayapple	white aster
	asters	hayscented fern	lespedeza
	sensitive fern	Christmas fern	bush clover
	royal fern	partridgeberry	goldenrod
	skunk cabbage		

note: slopes have some species from the wetlands and uplands - area of transition

WILDLIFE

	non-tidal wetlands	woodlands	old field
MAMMALS	shrews moles opossum silver-haired bat river otter white-tailed deer muskrat raccoon	big brown bat shrews white-tailed gray squirrel chipmunk red fox	red bat striped skunk voles white-footed mou eastern mole cottontail rabbit meadow jumping mou
REPTILES+ AMPHIBIANS	ringneck snake king snake green snake water snake ribbon snake snapping turtle painted turtle mud turtle cricket frog green tree frog spring peeper bullfrog two-lined salamander mud salamander	black racer black rat snake hognose snake garter snake box turtle five-lined skink ground skink Fowler's toad spadefoot toad marbled salamander tiger salamander	black racer corn snake brown snake garter snake six-lined racer fence lizard American toa Fowlers toad
BIRDS	wood duck wood peckers barred owl red-shouldered hawk Cardinal woodcock	woodpeckers hawks owls wood pewee blue jay chickadee	hawks bob white quail mourning dove meadowlark grasshopper spa field sparrow

WILDLIFE con't

wetlands	woodlands	old field
fish crow	titmouse	cardinal
marsh wren	cardinal	vultures
wood thrush	junco	barn owl
white-eyed vireo	vultures	phoebe
seaside sparrow	Am. crow	house wren
	red-eyed vireo	Am. goldfinch
	rufous-sided towhee	

note: Not all these species were seen during the field visit, some are expected to use the site based on the vegetation and habitats found.

NOTES

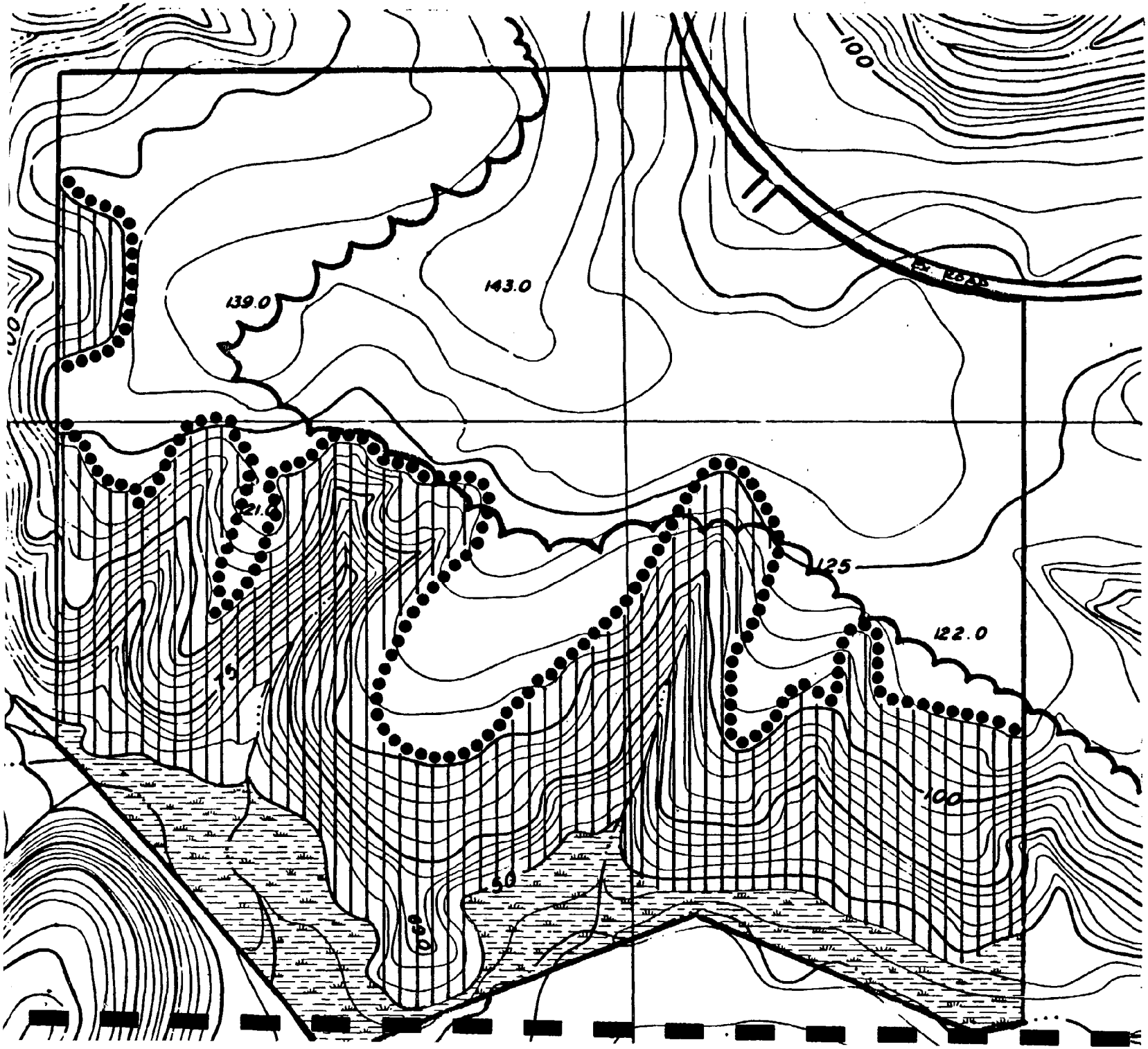
upland woods - snags, trees with cavities present
moderately abundant understory
sparse herbaceous layer
small animal dens seen
animal trails apparent
mostly leaf litter, some logs + sticks
dry sandy soil

old field - some perrenials, vines, small pines, oaks
sandy, dry soil
edge next to woods - no real transition zone, somewhat of a trail between the two

wetlands - palustrine forested along stream
Mt - mixed alluvial soil type
abundant understory
water stained leaves on ground
some exposed tree roots, moss
mottled clayey soils, silty above
somewhat poorly drained
deer, raccoon, bird tracks seen

development notes -

- stay in already cleared area as much as possible
- maintain woodland along western side to serve as a wildlife corridor connecting adjacent properties
- after development - plant wildlife plant food species (check lists) to encourage continued wildlife use of the site
- area of large beeches should be protected - some are potential champions



BEECH HILL

Office Review p.2

NONTIDAL WETLANDS

SLOPES > 15%

25' BUFFER

SCALE 1"=200'

CHAPTER 2

INVENTORY FORMS

WETLAND SITE INVENTORY

SITE: DATE:

OBSERVERS: AERIAL PHOTO #:

PROJECT NAME:

SUBDIVISION NUMBER: PROJECT NUMBER:

TAX MAP(S): BLOCK(S): P/

1. National Wetland Inventory quadrangle r
   Deale quad, PFO1A)

   quad _____

   unit _____

2. Soil survey sheet number and

   map # _____

   unit _____

3. Wetland system (based

   a. estuarine - tid

   b. riverine - w

   c. palustrine

4. Wetland subs

   a. tidal

   b. per
   the y

   c.

   d. 25

   e. 51-75%

   f. >7

   g. int

2. Arrangemer
   one).

   a. unifon
   into anothe

   b. moderate

   c. scattered
   much intrusio

   Estimate number

3.

OLD FIELD SITE INVENTORY

DATE:

AERIAL PHOTO #

PROJ

SITE:

OBSERVERS:

PROJECT NAME:

SUBDIVISION NUMBER:

BLOCK(S):

TAX MAP(S):

1. Dominant seral stage (d
   (circle one):

   a. native annuals

   b. perennials
   plants)

   herb

SITE:

OBSERVERS:

PROJECT NAME:

SUBDIVISION NUMBER:

TAX MAP(S):

BLOCK(S):

PROJECT NUMBER:

PARCEL(S):

1. List overstory trees, indicate (*) most abundant species:

2. Approximate percent closed canopy (circle one):

   70% + closure

   40 - 69% closure

   10 - 39% closure

   0 - 9% closure

3. Average diameter at breast height (4.5') of overstory trees
   representative of the diversity (in inches).

4. Percent of overstory trees in hard mast (i.e. oak, hickory,
   walnut, beech).

5. Percent of overstory trees in soft mast (i.e. pines, sweet gum,
   maple, tulip, black gum).

6. Percent of overstory non-deciduous trees (i.e. pines, hollies,
   cedars).

7. Trees with cavities present (circle one). Yes No

8. Standing dead wood (snags) or partially dead trees present (circle
   one). Yes No

WOODLAND SITE INVENTORY

DATE:

AERIAL PHOTO #:

WOODLAND SITE INVENTORY

SITE: DATE:

OBSERVERS: AERIAL PHOTO #:

PROJECT NAME:

SUBDIVISION NUMBER: PROJECT NUMBER:

TAX MAP(S): BLOCK(S): PARCEL(S):

1. List overstory trees, indicate (*) most abundant species:

2. Approximate percent closed canopy (circle one):

   70% + closure 10 - 39% closure

   40 - 69% closure 0 - 9% closure

3. Average diameter at breast height (4.5') of overstory trees representative of the diversity (in inches).

4. Percent of overstory trees in hard mast (i.e. oak, hickory, walnut, beech).

5. Percent of overstory trees in soft mast (i.e. pines, sweet gum, maple, tulip, black gum).

6. Percent of overstory non-deciduous trees (i.e. pines, hollies, cedars).

7. Trees with cavities present (circle one). Yes No

8. Standing dead wood (snags) or partially dead trees present (circle one).

   Yes No

9. Abundance of understory vegetation - high shrubs to tree growth of shade tolerant species (circle one).

none	moderately abundant
sparse	dense

10. List understory trees (* most abundant species):

11. Estimate percent of understory non-deciduous trees.

12. Shrub layer species - woody vegetation <6' high (circle one).

    a. wide variety of species, LIST:

    b. three species dominate, LIST:

    c. two species dominate, LIST:

    d. one species dominates:

13. Herbaceous layer - non-woody vegetation <3' high (circle one).

    a. grasses, sedges, and rushes dominate

    b. wide variety of grasses, sedges, rushes, and forbs (broad-leaved herbaceous plants), LIST:

    c. grasses and forbs dominate, LIST:

14. Small animal dens (i.e. mouse, snake) sighted. Yes No

15. Large animal dens (i.e. rabbit, fox) sighted. Yes No

16. Bird or squirrel nests sighted. Yes No

17. Animal trails (i.e. deer) sighted. Yes No

18. Type of ground litter (circle one):

    a. bare ground, no litter

    b. mostly leaf litter

    c. thick leaf litter with <25% logs and sticks

    d. thick leaf litter with 25 -50% logs and sticks

19. Texture of soil (circle one):

a. sandy
b. loamy
c. silty
d. clayey

20. Soil moisture (circle one)

a. dry
b. moist
c. saturated (little or no surface water)
d. inundated (surface water present)

21. Birds, mammals, reptiles, and amphibians sighted.

22. Miscellaneous comments (i.e. unique features, unique vegetation, transition zones, etc.)

OLD FIELD SITE INVENTORY

SITE: DATE:

OBSERVERS: AERIAL PHOTO #:

PROJECT NAME:

SUBDIVISION NUMBER: PROJECT NUMBER:

TAX MAP(S): BLOCK(S): PARCEL(S):

1. Dominant seral stage (developmental stage) of the community (circle one):

   a. native annuals

   b. perennials, annual grasses, forbs (broad-leaved herbaceous plants)

   c. herbaceous perennials, few annuals, up to 5% woody vegetation

   d. 25-50% briars, shrubs, small trees

   e. 51-75% woody

   f. >75% woody

   g. introduced species (monoculture)

2. Arrangement of plant subcommunities or seral stages (circle one).

   a. uniform - physically distinct communities, no intrusion of one into another

   b. moderately uniform

   c. scattered - difficult to distinguish separate communities, much intrusions of one into another

3. Estimate number of herbaceous species. List the common species.

4. Estimate number of woody species. List the common species.

5. Percent of ground surface covered by vegetation >1' high.

6. Height of dominant herbaceous vegetation (in inches).

7. Ground dens present. (Circle one). Yes No

8. Texture of soil:

   a. sandy
   b. loamy
   c. silty
   d. clayey

9. Factors affecting soil moisture (circle one):

   a. recent rainfall(date: / /)
   b. drought conditions
   c. proximity to water bodies

10,11,12. External edge is defined as a transition zone. If the interface between two habitat types has no transition zone, do not evaluate characteristics 10, 11, 12.

10. External edge between habitats (circle one):

    a. scarcely vegetated
    b. moderately vegetated
    c. densely vegetated

11. Shape of external edge between habitat types (circle one):

    a. straight
    b. slightly irregular
    c. highly irregular

12. Average width (in feet of external edge between habitat types.

13. If managed, what is the species composition (circle one):

    a. grass

    b. 50% grass, 50% legume (bean, pea, or related plant bearing pods that split in two when mature)

    c. legume

14. Management (circle one):

    a. no management

    b. mowed regularly

    c. mowed annually

    d. lightly grazed pastureland

    e. moderately grazed pastureland

    f. severely grazed pastureland

15. Birds, mammals, reptiles, and amphibians sighted.

16. Miscellaneous comments (unique features, unique vegetation, etc.)

WETLAND SITE INVENTORY

SITE: DATE:

OBSERVERS: AERIAL PHOTO #:

PROJECT NAME:

SUBDIVISION NUMBER: PROJECT NUMBER:

TAX MAP(S): BLOCK(S): PARCEL(S):

1. National Wetland Inventory quadrangle name and mapping unit (e.g., Deale quad, PFo1A)

   quad _____

   unit _____

2. Soil survey sheet number and mapping unit (e.g., 17, RuB2)

   map # _____

   unit _____

3. Wetland system (based on Cowardin, circle one):

   a. estuarine - tidal habitats and adjacent tidal wetlands

   b. riverine - wetlands and deepwater habitats within a channel

   c. palustrine - nontidal wetlands, e.g., marsh, swamp, bog

4. Wetland subsystem (circle one):

   a. tidal - water flow is under tidal influence

   b. perennial - no tidal influence, some water flows throughout the year

   c. intermittent - nontidal, water flows only part of the year

5. List overstory trees present, indicate (*) most abundant species:

6. List understory trees present, indicate (*) most abundant species:

7. Shrub layer species - woody vegetation <6' high (circle one):

   a. wide variety of species, LIST:

   b. three species dominate, LIST:

   c. two species dominate, LIST:

   d. one species dominates:

8. Herbaceous layer - nonwoody vegetation <3' high (circle one):

   a. grasses, sedges, and rushes dominate

   b. wide variety of grasses, sedges, rushes, and forbs (broad-leaved herbaceous plants), LIST:

   c. grasses and forbs dominate, LIST:

9. Wetland indicators when water is absent (circle all appropriate):

   a. water stains on tree trunks

   b. thin layer of sediment on leaf litter deposited by flooding

   c. absence of herbaceous (and possibly shrub) layer

   d. water stained (gray to black) leaves in the ground cover

   e. swollen tree trunks at the bases (buttresses)

   f. moss/sedge hummocks (small elevated areas)

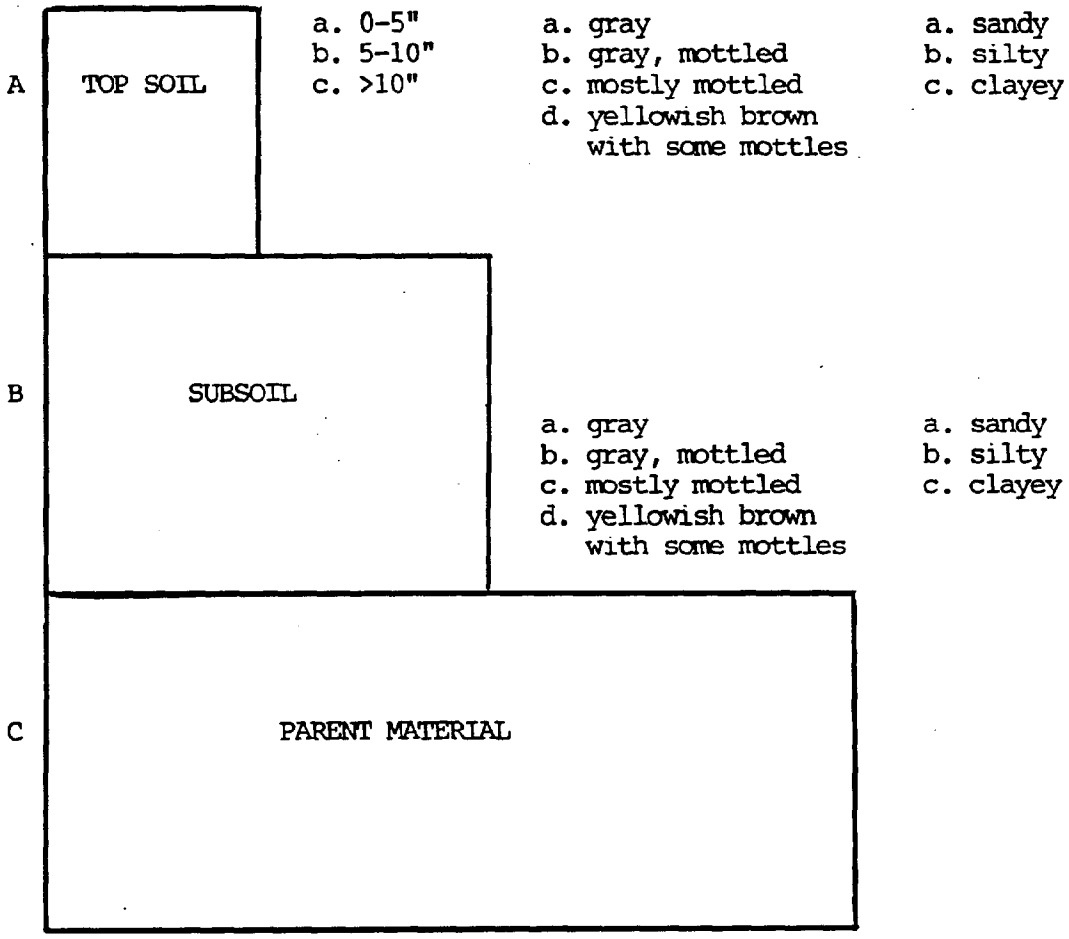
   g. exposed tree roots

   h. patches of sphagnum moss present

10. Position in the landscape (e.g. depression, swale, ditch, etc.)

11. Is there an organic layer (i.e. peat) present on the soil surface? If so, how deep is it (in inches)?

12. Soil profile information (circle appropriate letter in each column).



13. Drainage class (see illustration, circle one):

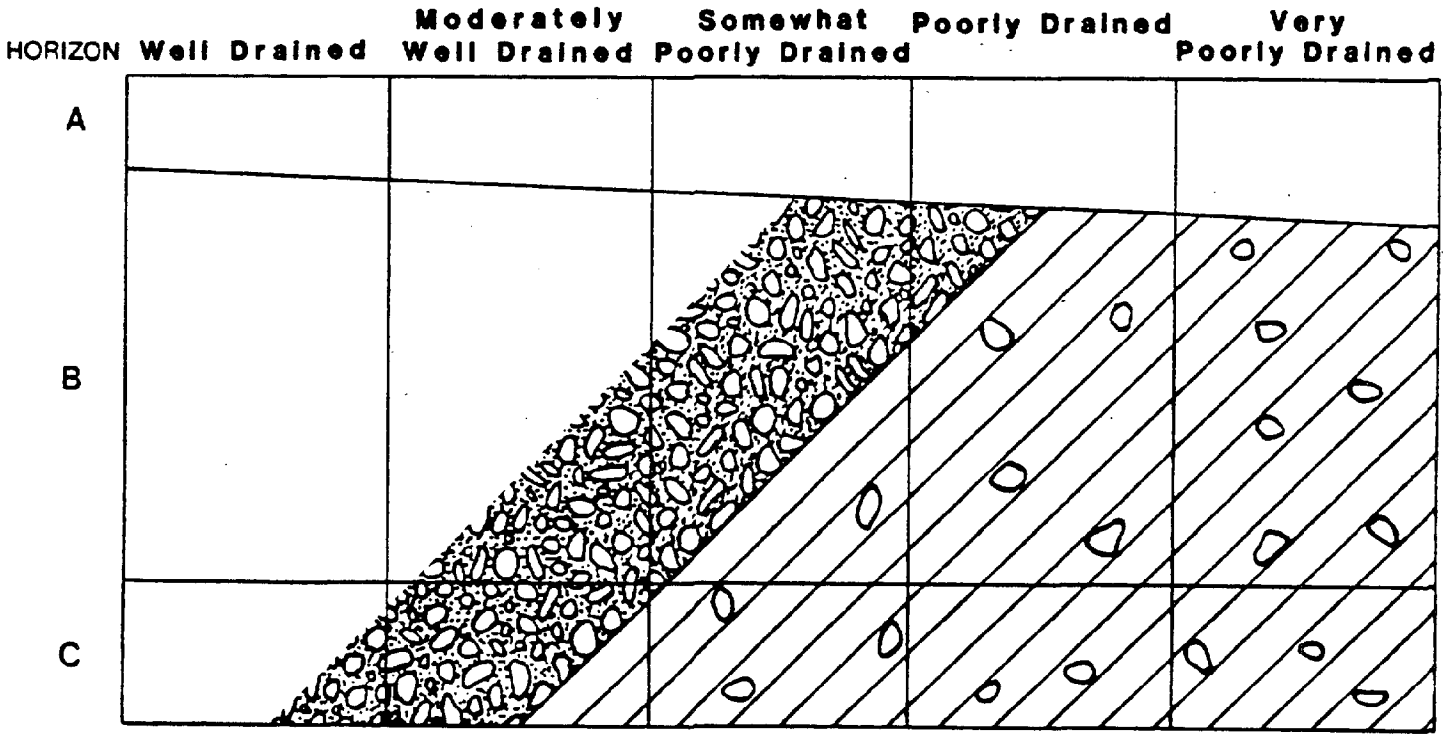
a. well-drained

b. moderately well-drained

c. somewhat poorly drained

d. poorly drained

e. very poorly drained



mottles - irregular spots of different size and color indicative of poor drainage

greying - chemical reduction of anaerobic soils resulting in gray-green coloration

The A horizon thickens as the soil has poorer drainage.

NOTE: The proportions of the profiles are relative, not exact.

GLOSSARY

Buffer - in the Critical Area a naturally vegetated area or vegetated area established or managed to protect aquatic, wetland, shoreline and terrestrial environments from man-made disturbances.

Colonial nesting water birds - herons, egrets, terns, and glossy ibis. For purposes of nesting, these birds congregate (that is "colonize") in relatively few areas, at which time, the regional populations of these species are highly susceptible to local disturbances.

Documented breeding bird areas - forested areas where the occurrence of interior dwelling birds, during the breeding season, has been demonstrated as a result of onsite surveys using standard biological survey techniques.

Endangered species - species of fish, plants, or wildlife which have been designated as such by regulation by the Secretary of Department of Natural Resources or the U.S. Department of the Interior. This designation implies the continued existence of these species as part of the State's or nation's resources is in jeopardy.

Forest - a biological community dominated by trees and other woody plants covering a land area of one acre or more. This also includes forests that have been cut, but not cleared.

Forest interior dwelling birds - species of birds which require relatively large forested tracts in order to breed successfully (for example, various species of flycatchers, warblers, vireos, and woodpeckers).

Habitat Protection Area - areas of State and local significance as identified using the Habitat Assessment Methodology found in the Habitat Assessment Manual. These areas include:

- Buffers
- Nontidal wetlands
- Habitats of threatened, and endangered species, and species in need of conservation
- Anadromous fish propagation waters
- Plant and wildlife habitats, including
    * Colonial water bird nesting sites
    * Historic waterfowl staging and concentration areas
    * Riparian forests (of 300' or more in width)
    * Large forested areas (100 acres or more)
    * Natural Heritage Areas
    * Plant and wildlife habitats of local significance
    * Areas identified in the future as one of the above

Historic waterfowl staging and concentration area - an area of open water and adjacent marshes where waterfowl gather during migration and throughout the winter season. These areas are "historic" in the sense that their location is common knowledge and because these areas have been used regularly during recent times.

Hydric soil - soil that in its undrained condition is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation.

Hydrophytic vegetation - those plants cited in "Vascular Plant Species Occurring in Maryland Wetlands" (Dawson, F. et al., 1985) which are described as growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (plants typically found in water habitats).

Mean High Water Line - the average level of high tides at a given location.

Natural Heritage Area - any community of plants or animals which are considered to be among the best Statewide examples of their kind, and are designated by regulation by the Secretary of the Department of Natural Resources.

Natural vegetation - those plant communities that develop in the absence of human activities.

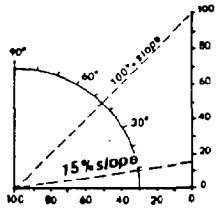
Nature-dominated - a condition where landforms or biological communities, or both have developed by natural processes in the absence of human intervention.

Natural features - components and processes present or produced by nature, including but not limited to, soil types, geology, slopes, vegetation, surface water, drainage patters, aquifers, recharge areas, climate, floodplains, aquatic life, and wildlife.

Riparian habitat - a habitat that is strongly influenced by water and which occurs adjacent to streams, shorelines, and wetlands.

Species in need of conservation - species of fish, plant, or wildlife whose continued existence as part of the State's resources is questionable and which may be designated by regulation by the Secretary of the Department of Natural Resources as in need of conservation.

Steep slopes - slopes of 15% or greater incline.

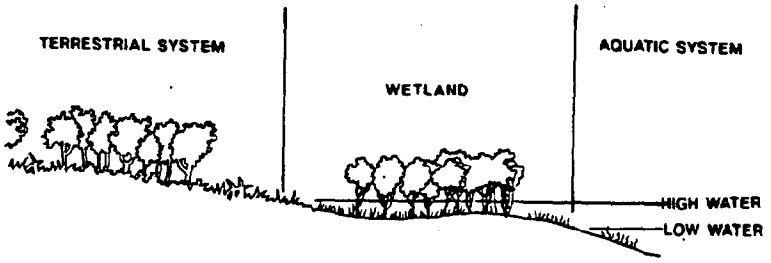


Threatened species - those species of fish, plant, or wildlife so designated by the Department of Natural Resources as appearing likely to become endangered within the foreseeable future.

Tributary streams - those perennial and intermittent streams in the Critical Area in the County that are so noted on the most recent U.S. Geological Survey 7 1/2 minute topographic quadrangle maps (Scale 1:24,000) or on more detailed maps or studies at the discretion of the Office of Planning and Zoning.

Waterfowl - birds which frequent and often swim in water, nest and raise their young near water, and derive at least part of their food from aquatic plants and animals.

Wetlands - lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have two or more of the following three attributes: 1) at least periodically, the land supports predominantly hydrophytic vegetation in one or more of the vegetative layers present on the site; 2) the substrate is predominantly hydric soil; and 3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.



Wildlife corridor - a strip of land having vegetation that provides habitat and a safe passageway for wildlife.

EQUIPMENT

Compass
Diameter at Breast Height Tape
Binoculars
Clipboard, paper, and pencils
Field Guides
Field Forms

SUGGESTED FIELD GUIDES

Birds
Robbins, C.S. et.al. 1966. Birds in North America. New Jersey: Golden Press.

Reptiles/Amphibians
Behler, J.L. and F.W. King. 1985. The Audubon Society Field Guide to North American Reptiles and Amphibians. New York: Alfred A. Knopf.

Trees
Brown, R.G. and M.L. Brown. 1972. Woody Plants of Maryland. College Park, MD.

Wetland Plants
Fassett, N.C. 1975. A Manual of Aquatic Plants. Madison: University of Wisconsin Press.

Animal Tracks
Headstrom, R. 1971. Identifying Animal Tracks. New York: Dover Publications, Inc.

Wildflowers
Peterson, R.T. and M. McKenny. 1968. A Field guide to Wildflowers of Northeastern and Northcentral North America. Boston: Houghton Mifflin Company.

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Anne Arundel County Critical Areas Advisory Committee. Recommended Areas of Critical State Concern in Anne Arundel County. 1978.

Avery, T.E. Interpretation of Aerial Photographs. Minneapolis, Burgess Publishing Co. 1982.

Baskett, T.S. et al. A Handbook for Terrestrial Habitat Evaluation in Central Missouri. Washington, D.C. USFWS, Res. Pub. 133. 1980.

Cowardin, L. M et al. Classification of Wetlands and Deepwater Habitats of the United States. Washington, D. C.: USFEW/OBS - 79/31. 1979.

Cox, G.W. Laboratory Manual of General Ecology. Dubuque: Wm. C. Brown Co. Publishers. 1980.

de Vos, A. and H.S. Mosby. "Evaluation of Habitat" in Wildlife Investigation Techniques. (H. S. Mosby, ed.) pp. 52-88. Ann Arbor: The Wildlife Society. 1963.

Ellis, J. A. et al. Results of Testing Four Methods of Habitat Evaluation. Columbia University of Missouri, 1978.

Flood, B.S. et al. A Handbook for Habitat Evaluation Procedures. Washington, D. C.:USFWS Res. Pub. 132. 1977.

Hays, R. L., C. Summers, and W. Seitz. Estimating Wildlife Habitat Variables. Washington, D.C. USFWS/OBS - 81/47. 1981.

Kusher, J.A. Our National Wetland Heritage: A Protection Guidebook. Washington, D.C.:The Environment Law Institute 1983.

Maryland Department of Natural Resources: Coastal Zone Management Program. Maryland Upland Natural Areas Study: Field Notebook, Western Shore. 1976.

Maryland Department of Natural Resources: Forest, Park, and Wildlife Service. Environmental Sensitivity Index Atlas of Maryland. 1983.

Maryland Department of Natural Resources: Tidewater Administration. Survey and Inventory of Anadromous Fish Spawning Areas. 1980.

Maryland Department of Natural Resources: Tidewater Administration/Coastal Resources Division. Introduction to Wetlands Identification and Classification. 1986.

Maryland Department of State Planning, Compendium of Natural Features Information. HUD Project No. P-1013-500. Baltimore. 1975.

Maryland Department of State Planning. Areas of Critical State Concern: Designation Report. 1981.

Powell, D. S. and N.P. Kingsley. The Forest Resources of Maryland. Forest Service Resource Bulletin NE-61. Broomhall, PA: USDA Forest Service. 1980.

Sheffield, P. R. Multiresource Inventories: Techniques for Evaluating Nongame Bird Habitats. USDA Forest Service Research Paper SE-218.

Smith, R. L. Ecology and Field Biology. New York: Harper and Row Publishers. 1980.

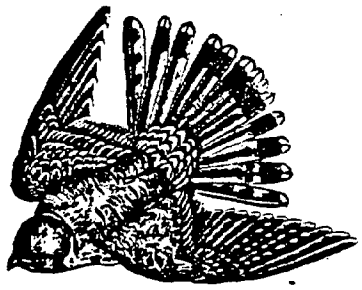
Smithsonian Institution, Center for Natural Areas. Natural Areas of the Chesapeake Bay Region: Ecological Priorities. 1974.

Stanford, J.A. Land-use and Wildlife Habitat Analysis in Missouri. Missouri Department of Conservation. 1980.

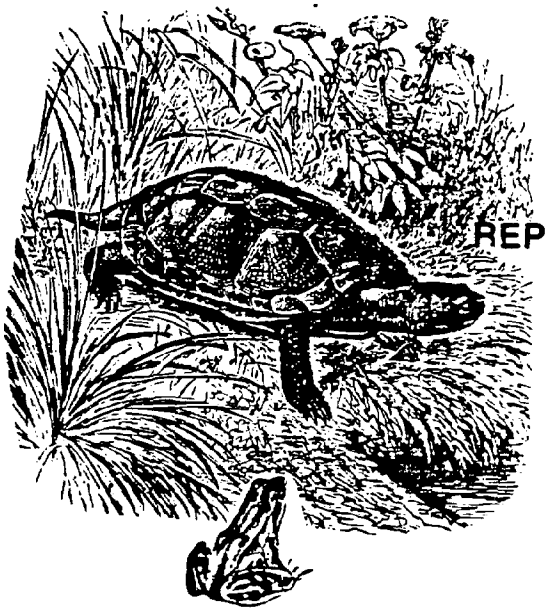
Whitaker, G.A., E.P. Roach, and R. H. McCuen. Inventorying Habitats and Rating Their Value for Wildlife Species. US Fish and Wildlife Service Conference, October 24-27, 1970.

CHAPTER 3

ANNE ARUNDEL COUNTY SPECIES

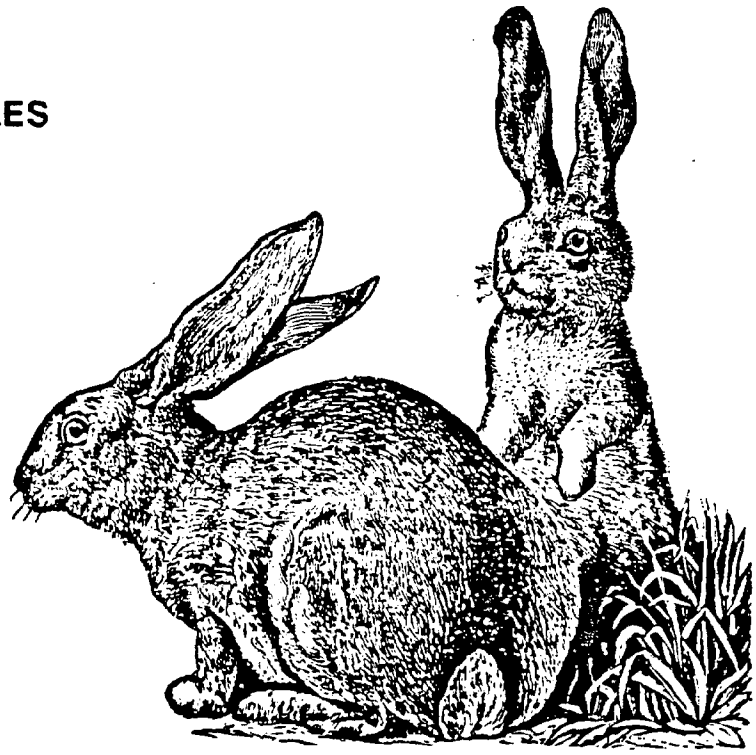


BIRDS



REPTILES

AMPHIBIANS



MAMMALS

BIRDS

BIRDS

Great Blue Heron	Ardea herodias
Green Heron	Butorides virescens
Little Blue Heron	Egretta caerulea
Cattle Egret	Bubulcus ibis
Snowy Egret	Egretta thula
Least Bittern	Ixobrychus exilis
Canada Goose	Branta canadensis
Mallard	Anas platyrhynchos
American Black Duck	Anas rubripes
Blue-winged Teal	Anas discors
Wood Duck	Aix sponsa
Common Merganser	Mergus merganser
Turkey Vulture	Cathartes aura
Black Vulture	Coragyps atratus
Cooper's Hawk	Accipiter cooperii
Red-tailed Hawk	Buteo jamaicensis
Red-shouldered Hawk	Buteo lineatus
Broad-winged Hawk	Buteo platypterus
Bald Eagle	Haliaeetus leucocephalus
Osprey	Pandion haliaetus
Peregrine Falcon	Falco peregrinus
American Kestrel	Falco sparverius
Common Bobwhite	Colinus virginianus
King Rail	Rallus elegans
Clapper Rail	Rallus longirostris
Virginia Rail	Rallus limicola
Killdeer	Charadrius vociferus
Spotted Sandpiper	Actitis macularia
American Woodcock	Philohela minor
Least Tern	Sterna albifrons
Rock Dove	Columba livia
Mourining Dove	Zenaidura macroura
Yellow-billed Cuckoo	Coccyzus americanus
Barn Owl	Tyto alba
Common Screech Owl	Otus asio
Great Horned Owl	Bubo virginianus
Barred Owl	Strix varia
Chuck-will's-widow	Caprimulgus carolinensis
Whip-poor-will	Caprimulgus vociferus
Common Nighthawk	Chordeiles minor
Chimney Swift	Chaetura pelagica
Ruby-throated Hummingbird	Archilochus colubris
Belted Kingfisher	Ceryle alcyon
Common Flicker	Colaptes auratus
Pileated Woodpecker	Dryocopus pileatus
Red-bellied Woodpecker	Melanerpes carolinus
Red-headed Woodpecker	Melanerpes erythrocephalus
Hairy Woodpecker	Picoides villosus
Downy Woodpecker	Picoides pubescens

BIRDS
(cont.)

Eastern Kingbird	Tyrannus tyrannus
Great Crested Flycatcher	Myiarchus crinitus
Eastern Phoebe	Sayornis phoebe
Acadian Flycatcher	Empidonax virescens
Willow Flycatcher	Empidonax traillii
Eastern Pewee	Contopus virens
Horned Lark	Eremophila alpestris
Tree Swallow	Iridoprocne bicolor
Bank Swallow	Riparia riparia
Rough-winged Swallow	Stelgidopteryx ruficollis
Barn Swallow	Hirundo rustica
Cliff Swallow	Petrochelidon pyrrhonata
Purple Martin	Progne subis
Blue Jay	Cyanocitta cristata
American Crow	Corvus brachyrhynchos
Fish Crow	Corvus ossiflagus
Carolina Chickadee	Parus carolinensis
Tufted Titmouse	Parus bicolor
White-breated Nuthatch	Sitta carolinensis
Brown-headed Nuthatch	Sitta pusilla
Brown Creeper	Certhia familiaris
House Wren	Troglodytes aedon
Carolina Wren	Thryothorus ludovicianus
Marsh Wren	Telmatodytes palustris
Northern Mockingbird	Mimus polyglottis
Gray Catbird	Dumetella carolinensis
Brown Thrasher	Toxostoma rufum
American Robin	Turdus migratorius
Wood Thrush	Hylocichla mustelina
Eastern Bluebird	Sialia sialis
Blue-gray Gnatcatcher	Polioptila caerulea
Cedar Waxwing	Bombycilla cedrorum
European Starling	Sturnus vulgaris
White-eyed Vireo	Vireo griseus
Yellow-throated Viero	Vireo flavifrons
Red-eyed Vireo	Vireo olivaceus
Black-and-white Warbler	Mniotilta varia
Prothonotary Warbler	Protonotaria citrea
Worm-eating Warbler	Helmitheros vermivorus
Blue-winged Warbler	Vermivora pinus
Northern Parula Warbler	Parula americana
Yellow Warbler	Dendroica petechia
Yellow-rumped Warbler	Dendroica coronata
Yellow-throated Warbler	Dendroica dominica
Pine Warbler	Dendroica pinus
Prairie Warbler	Dendroica discolor
Ovenbird	Seiurus aurocapillus
Louisiana Waterthrush	Seiurus motacilla

BIRDS
(cont.)

Kentucky Warbler	Oporonis formosus
Common Yellowthroat	Geothlypis trichas
Yellow-breasted Chat	Icteria virens
Hooded Warbler	Wilsonia citrina
American Redstart	Setophaga ruticilla
House Sparrow	Passer domesticus
Eastern Meadowlark	Sturnella magna
Red-winged Blackbird	Agelaius phoeniceus
Orchard Oriole	Icterus spurius
Northern Oriole	Icterus galbula
Boat-tailed Grackle	Quiscalus major
Common Grackle	Quiscalus quiscular
Brown-headed Cowbird	Molthrus ater
Scarlet Tanager	Pirango olivacea
Summer Tanager	Piranga rubra
Northern Cardinal	Cardinalis cardinalis
Blue Grosbeak	Guiraca coerulea
Indigo Bunting	Passerina cyanea
House Finch	Carpodacus mexicanus
American Goldfinch	Spinus tristis
Dark-eyed Junco	Junco hyemalis
Rufous-sided Towhee	Pipilo erythrophthalmus
Grasshopper Sparrow	Ammodramus savannarum
Seaside Sparrow	Ammospiza maritima
Chipping Sparrow	Spizella passerina
Field Sparrow	Spizella pusilla
White-throated Sparrow	Zonotrichia albicollis
Song Sparrow	Melospiza melodia

BIRDS

Great Blue Heron — Ardea herodias

HABITAT PREFERENCES
lakes, ponds, rivers, marshes

FOOD PREFERENCES

fish	mice	snakes
insects	shrews	turtles
crayfish	frogs	

Green Heron — Butorides virescens

HABITAT PREFERENCES
woods near marshes or open water, swamps, creeks, tidal marshes

FOOD PREFERENCES

crayfish	small fish	aquatic insects

Little Blue Heron — Egretta caerulea

HABITAT PREFERENCES
freshwater swamps, coastal thickets

FOOD PREFERENCES

insects	insect larvae

Cattle Egret — Bubulcus ibis

HABITAT PREFERENCES
open fields near livestock, marshes for breeding

FOOD PREFERENCES
insects

Snowy Egret — Egretta thula

HABITAT PREFERENCES
salt marshes, ponds, shallow bays

FOOD PREFERENCES

shrimp	small fish

Least Bittern — Ixobrychus exilis

HABITAT PREFERENCES
fresh and brackish water marshes, swamps, with dense stands of cattails

FOOD PREFERENCES

insects	crayfish	frogs

Canada Goose — Branta canadensis

HABITAT PREFERENCES
shallow water with aquatic vegetation in ponds, estuaries, tidal bays, tidal marshes, agricultural areas adjacent water

FOOD PREFERENCES

marsh plants	spikerush	widgeongrass
cordgrass	sea lettuce	

Mallard — Anas platyrhynchos

HABITAT PREFERENCES
freshwater marshes, edges of ponds, streams with marsh vegetation

FOOD PREFERENCES

aquatic beetles	caddisfly larvae	spikerush
beetle larvae	wildrice	arrowhead
dragonfly nymphs	pondweed	buttonbush
damselfly nymphs	smartweed	acorns
mayfly larvae	wild celery	farm crops
stonefly larvae	bulrush	duckweed

American Black Duck — Anas rubripes

HABITAT PREFERENCES
high ground near marshes,open water; tidal marshes, marsh meadows; inland ponds and streams with aquatic vegetation

FOOD PREFERENCES

mollusks	pondweed	widgeongrass
crustaceans	wildrice	arrowhead
insects	cordgrass	eelgrass
fish	bulrush	sedges
	smartweed	spikerush

Blue-winged Teal — Anas discors

HABITAT PREFERENCES
marshes, ponds, shallow lakes, mud flats, wet fields

FOOD PREFERENCES
aquatic insects aquatic vegetation

Wood Duck — Aix sponsa

HABITAT PREFERENCES
bottomland hardwood forests with trees large enough to provide nesting cavities and water to provide food; wooded swamps, fresh marshes

FOOD PREFERENCES

insects	burreed	sedges
spiders	smartweed	grape
crustaceans	arrow-arum	arrowhead
wild rice	duckweed	beach nuts
pondweed	wild celery	acorns

Common Merganser — Mergus merganser

HABITAT PREFERENCES
ponds, wooded rivers

FOOD PREFERENCES
fish

Turkey Vulture — Cathartes aura

HABITAT PREFERENCES
woodland; deciduous forest, upland brush; prefers edges; preferred nest site is a hollow stump or crevice in a rock pile

FOOD PREFERENCES
carrion

Black Vulture — Coragyps atratus

HABITAT PREFERENCES
deciduous forest, wooded margins, crop or pastureland; preferred nest site is a hollow tree stump, broken-off tree trunk or under a log or fallen tree

FOOD PREFERENCES
carrion

Cooper's Hawk — Accipiter cooperii

HABITAT PREFERENCES
deciduous forests with scattered clearings

FOOD PREFERENCES

rodents	small reptiles	insects

Red-tailed Hawk — Buteo jamaicensis

HABITAT PREFERENCES
deciduous forest and adjacent old fields, marshes, other open areas; 25 acres for breeding

FOOD PREFERENCES

rodents	lizards	grasshoppers
rabbits	small birds	beetles
snakes	frogs	

Red-shouldered Hawk — Buteo lineatus

HABITAT PREFERENCES
wet mixed forests, swamps, floodplains; 250 acres required to sustain a breeding population

FOOD PREFERENCES

small birds	lizards	beetles
rabbits	snakes	grasshoppers
rodents	frogs	

Broad-winged Hawk — Buteo platypterus

HABITAT PREFERENCES
extensive deciduous forests or mixed forests

FOOD PREFERENCES

small rodents	lizards
rabbit	small birds
snakes	insects

Bald Eagle — Haliaeetus leucocephalus

HABITAT PREFERENCES
tidewater; bays and estuaries; deciduous forest near water

FOOD PREFERENCES

fish	rodents
small birds	

Osprey — Pandion haliaetus

HABITAT PREFERENCES
marshes, tidal water bodies, bays, estuaries, rivers

FOOD PREFERENCES
fish

Peregrine Falcon — Falco peregrinus

HABITAT PREFERENCES
tidal marshes, bay shores, open country

FOOD PREFERENCES

birds	ducks	rodents

American Kestrel — Falco sparverius

HABITAT PREFERENCES
open country with scattered trees and along forest/field edges; home range averages 350 acres

FOOD PREFERENCES

insects	small birds	rodents

Common Bobwhite — Colinus virginianus

HABITAT PREFERENCES
farmland, old fields, especially edge areas; hedgerows

FOOD PREFERENCES

beetles	ragweed	grape
grasshoppers	smartweed	blackberry
crickets	lespedeza	ash
spiders	beggarweed	oak
snails	partridgepea	pine
centipedes	poison ivy	dogwood
sow bugs	sumac	corn

King Rail — Rallus elegans

HABITAT PREFERENCES
freshwater marshes, brackish marshes

FOOD PREFERENCES

aquatic insects	crayfish	small fish
crabs	mollusks	

Clapper Rail — Rallus longirostris

HABITAT PREFERENCES
salt and brackish marshes, tidal flats

FOOD PREFERENCES

shrimp	mollusks	clam worms
crayfish	small fish	cordgrass
crabs	aquatic insects	

Virginia Rail — Rallus limicola

HABITAT PREFERENCES
fresh and brackish marshes

FOOD PREFERENCES

beetles	ants	small fish
snails	grasshoppers	wild rice
spiders	crickets	bulrush
dragonfly nymphs	crustaceans	spikerush
damselfly nymphs	bryozoans	

Killdeer — Charadrius vociferus

HABITAT PREFERENCES
open sparse areas; pastures, sparsely vegetated agricultural and old fields; golf courses

FOOD PREFERENCES

beetles	ants
caterpillars	grasshoppers

Spotted Sandpiper — Actitis macularia

HABITAT PREFERENCES
near water, wooded and open areas, freshwater

FOOD PREFERENCES

insects	larvae

American Woodcock — Philohela minor

HABITAT PREFERENCES
swamps, wood margins, hedgerows, old fields, lowland woods

FOOD PREFERENCES

earthworms	millipedes
crustaceans	centipedes
insects	spiders

Least Tern — Sterna albifrons

HABITAT PREFERENCES
sandy coastlines, river shorelines

FOOD PREFERENCES
minnows aquatic invertabrates

Rock Dove — Columba livia

HABITAT PREFERENCES
cities, towns, farms; farm yards, old fields

FOOD PREFERENCES
insects chickweed crabgrass

Mourning Dove — Zenaidura macroura

HABITAT PREFERENCES
agricultural areas and adjacent hedgerows; residential areas, suburbs; farmland, wood lots, orchards

FOOD PREFERENCES
corn crabgrass
ragweed panic grass
pokeweed chickweed
knotweed pine

Yellow-billed Cuckoo — Coccyzus americanus

HABITAT PREFERENCES
second growth woodlands, streamside thickets, hedgerows, scrub areas

FOOD PREFERENCES
caterpillars grasshoppers

Barn Owl — Tyto alba

HABITAT PREFERENCES
agricultural lands or marshes in the vicinity of buildings or other structures

FOOD PREFERENCES
rodents insects

Common Screech Owl — Otus asio

HABITAT PREFERENCES
open deciduous woods, orchards, lake shores; nests in tree cavities and bird boxes; home range averages 130 acres

FOOD PREFERENCES

rodents	crayfish	
rabbits	frogs	
rats	insect	
squirrels		

Great Horned Owl — Bubo virginianus

HABITAT PREFERENCES
pine forests, upland deciduous forests and adjacent agricultural fields, marshes; home range averages 500 acres

FOOD PREFERENCES

rabbits	insects	rodents
squirrels	frogs	crayfish

Barred Owl — Strix varia

HABITAT PREFERENCES
bottomlands, swamps, moist woods; sometimes oak forests, mixed hardwood - coniferous woods

FOOD PREFERENCES

rodents	squirrels	fish
rabbits	crayfish	insects

Churck-will's-widow — Caprimulgus carolinensis

HABITAT PREFERENCES
open upland mixed forests, brushy areas, woodland margins

FOOD PREFERENCES

beetles	flies	moths
flying ants	grasshoppers	mosquitos

Whip-poor-will — Caprimulgus vociferus

HABITAT PREFERENCES
upland deciduous forests near clearings or margins; eggs are laid on the ground among dead leaves

FOOD PREFERENCES

beetles	flies	moths
flying ants	grasshoppers	mosquitos

Common Nighthawk — Chordeiles minor

HABITAT PREFERENCES
open woodlands or meadows, cities or towns

FOOD PREFERENCES

mosquitos	flying ants	

Chimney Swift — Chaetura pelagica

HABITAT PREFERENCES
towns, cities; need chimneys or other man-made structures for nesting

FOOD PREFERENCES

coddisfly	wasps	beetles
mayfly	ants	
cranefly	bees	

Ruby-throated hummingbird — Archilochus colubris

HABITAT PREFERENCES
moist forest, hedgerows, wood margins

FOOD PREFERENCES

jewelweed	morning glory	cardinal flower
thistle	Japanese honeysuckle	evening primrose
coralberry	trumpet creeper	black locust

Belted Kingfisher — Ceryle alcyon

HABITAT PREFERENCES
margins of streams, ponds, estuaries

FOOD PREFERENCES

fish	crayfish	frogs
crabs	mussels	lizards

Common Flicker — Colaptes auratus

HABITAT PREFERENCES
rural areas, open woods, scattered trees, edges; old orchards, wood lots

FOOD PREFERENCES

ants	caterpillars	dogwood
beetles	Virginia creeper	wild cherry
grasshoppers	poison ivy	
crickets	hackberry	
cockroaches	blackgum	

Pileated Woodpecker — Dryocopus pileatus

HABITAT PREFERENCES

extensive forested areas, floodplain, swamp forest; nests in tree cavities; 125 acres contiguous forest needed for breeding

FOOD PREFERENCES

ants	grape	Virginia creeper
beetles	holly	sassafras
insect larvae	blackgum	

Red-bellied Woodpecker — Melanerpes carolinus

HABITAT PREFERENCES

bottomland woods, swamps, other woodlands; nest in tree cavities; 10-acre minimum needed for breeding population; 270-foot minimum width riparian forest needed for breeding

FOOD PREFERENCES

beetles	oak	mulberry
ants	pine	Virginia creeper
grasshoppers	cherry	poison ivy
crickets	grape	bayberry
caterpillars	hickory	corn

Red-headed woodpecker — Melanerpes erythrocephalus

HABITAT PREFERENCES

open deciduous woodlands

FOOD PREFERENCES

beetles	caterpillars	cherry
ants	corn	mulberry
grasshoppers	oak	berries

Hairy Woodpecker — Picoides villosus

HABITAT PREFERENCES

extensive upland or bottomland forests; 120-foot minimum width riparian forest and 25 acres contiguous forest needed for breeding

FOOD PREFERENCES

beetles	spiders	poison ivy
beetle larvae	millipedes	dogwood
ants	aphids	pokewood
caterpillars		wild cherry

Downy Woodpecker — Picoides pubescens

HABITAT PREFERENCES
open woodland, orchards, woodland edges

FOOD PREFERENCES

ants	caterpillars	moths
spiders	adult beetles	poison ivy
snails	beetle larvae	dogwood

Eastern Kingbird — Tyrannus tyrannus

HABITAT PREFERENCES
open areas, farms, orchards, hedgerows, often by water

FOOD PREFERENCES

honeybees	grasshoppers	sassafras
ants	flies	dogwood
beetles		wild cherry

Great Crested Flycatcher — Myiarchus crinitus

HABITAT PREFERENCES
mature deciduous or mixed deciduous-coniferous woodlands; 100-foot minimum width riparian forest and 10 acreas contiguous forest needed for breeding

FOOD PREFERENCES

moths	caterpillars	sassafras
beetles	grasshoppers	Virginia creeper
bees	crickets	
flies		

Eastern Phoebe — Sayornis phoebe

HABITAT PREFERENCES
edge habitats, wood and field margins, usually near water

FOOD PREFERENCES

bees	grasshoppers	flies
wasps	crickets	spiders
ants	moths	
beetles	caterpillars	sumac

Acadian Flycatcher — Empidonax virescens

HABITAT PREFERENCES
mature deciduous woodlands near water; floodplain and swamp forest; 125 acres contiguous forest needed to maintain a breeding population

FOOD PREFERENCES

flies	mosquitos
moths	flying ants
beetles	

Willow Flycatcher — Empidonax traillii

HABITAT PREFERENCES
upland pastures, orchards

FOOD PREFERENCES

flies	small moths
mosquitos	flying ants

Eastern Pewee — Contopus virens

HABITAT PREFERENCES
mature deciduous forest,s woodland margins; 25 acres contiguous forest needed to maintain a breeding population

FOOD PREFERENCES
insects

Horned Lark — Eremophila alpestris

HABITAT PREFERENCES
cultivated fields, pastures, golf courses, beach areas; habitats with sparse vegetation

FOOD PREFERENCES

adult beetles	grasshoppers	smartweed
beetle larvae	bristlegrass	crabgrass
caterpillars	ragweed	sedges

Tree Swallow — Iridoprocne bicolor

HABITAT PREFERENCES
open country near water, marshes with standing dead trees

FOOD PREFERENCES

flies	wasps	grasshoppers
beetles	moths	waxmyrtle
ants	spiders	bayberry
bees	dragonflies	

Bank Swallow — Riparia riparia

HABITAT PREFERENCES
near water with steep banks, in vicinity of open water - rivers, ponds

FOOD PREFERENCES

beetles	bees	dragonflies
winged ants	flies	spiders
wasps	moths	grasshoppers

Rough-winged Swallow — Stelgidopteryx ruficollis

HABITAT PREFERENCES
near water with steep banks, i.e., ponds, estuaries, rivers

FOOD PREFERENCES

beetles	bees	winged ants
wasps	spiders	dragonflies
flies	moths	grasshoppers

Barn Swallow — Hirundo rustica

HABITAT PREFERENCES
open country near buildings; common in suburbs

FOOD PREFERENCES

beetles	flies	winged ants
wasps	moths	dragonflies
bees	spiders	grasshoppers

Cliff Swallow — Petrochelidon pyrrhonata

HABITAT PREFERENCES
open country near buildings, bridges

FOOD PREFERENCES

beetles	moths	winged ants
wasps	bees	dragonflies
flies	spiders	grasshoppers

Purple Martin — Progne subis

HABITAT PREFERENCES
open country, often near water; gardens, farmlands, open woodlands

FOOD PREFERENCES

grasshoppers	beetles	flies
dragonflies	spiders	bees
winged ants	moths	wasps

Blue Jay — Cyanocitta cristata

HABITAT PREFERENCES

woodlands, especially open oak/beech forests; also city parks, suburbs; 10 acres contiguous forest needed to maintain a breeding population

FOOD PREFERENCES

caterpillars	birds' eggs	oak
grasshoppers	mice	beech
beetles	frogs	blackberry

American Crow — Corvus brachyrhynchos

HABITAT PREFERENCES

open areas, edges, agricultural lands, adjacent woodlands

FOOD PREFERENCES

grasshoppers	crustaceans	corn
ground beetles	amphibians	oak
caterpillars	reptiles	mulberry
carrion	eggs	wild cherry

Fish Crow — Corvus ossifragus

HABITAT PREFERENCES

wood edges, tidewater areas, marsh habitats along rivers, swamps, lakes

FOOD PREFERENCES

weevils	fish	blackberry
beetles	crayfish	mulberry
beetle larvae	eggs	hackberry
carrion	wild rice	green briar

Carolina Chickadee — Parus carolinensis

HABITAT PREFERENCES

deciduous and coniferous forests and margins; suburbs, 25 acres contiguous forest needed for breeding populations

FOOD PREFERENCES

wasps	caterpillars	plant lice
katydids	spiders	pine
spiders	beetles	hemlock
moths	flies	poison ivy

Tufted Titmouse — Parus bicolor

HABITAT PREFERENCES
deciduous woodlands, breeds in bottom woodlands and swamps; 25 acres contiguous forest needed for breeding populations

FOOD PREFERENCES

caterpillars	beetles	blackberry
wasps	spiders	oak
ants	corn	beech

White-breasted Nuthatch — Sitta carolinensis

HABITAT PREFERENCES
upland and bottomland deciduous forests

FOOD PREFERENCES

beetles	moths	oak
ants	caterpillars	pine
spiders		

Brown-headed Nuthatch — Sitta pusilla

HABITAT PREFERENCES
coniferous and mixed forests

FOOD PREFERENCES

spiders	caterpillars
moths	pine cones

Brown Creeper — Certhia familiaris

HABITAT PREFERENCES
deciduous and mixed woodlands

FOOD PREFERENCES

insects	pine cones

House Wren — Troglodytes aedon

HABITAT PREFERENCES
wood/old field edges, hedgerows, orchards, suburbs

FOOD PREFERENCES
insects
spiders

Carolina Wren — Thryothorus ludovicianus

HABITAT PREFERENCES
brushy lowlands, thickets; floodplain forests with thick underbrush; 25 acres needed to maintain breeding population

FOOD PREFERENCES

ants	millipedes
flies	

Marsh Wren — Telmatodytes palustris

HABITAT PREFERENCES
marshes with tall vegetation, brackish cattail marshes

FOOD PREFERENCES

insects	
spiders	

Northern Mockingbird — Mimus polyglottis

HABITAT PREFERENCES
open areas with few trees; hedgerows; dense shrubbery, suburbs

FOOD PREFERENCES

beetles	holly	greenbriar
ants	grape	pokeweed
bees	sumac	Virginia creeper
wasps	blackgum	blackberry
grasshoppers	mulberry	hackberry

Gray Catbird — Dumetella carolinensis

HABITAT PREFERENCES
bottomland forest, wooded swamps; dense thickets, hedgerows, shrubby areas

FOOD PREFERENCES

ants	blackberry	grape
beetles	service berry	persimmon
caterpillars	elderberry	pokeweed
grasshoppers	blueberry	sassafras
greenbriar	bayberry	dogwood
sumac		

Brown Thrasher — Toxostoma rufum

HABITAT PREFERENCES
brushy, upland thickets; hedgerows; crop and pastureland

FOOD PREFERENCES

beetles	lizards	blackgum	blackberry
grasshoppers	salamanders	sumac	wild cherry
crickets	frogs	pine	blueberry
ants	oak	grape	Virginia creeper
caterpillars	dogwood	bayberry	
spiders	holly	elderberry	

American Robin — Turdus migratorius

HABITAT PREFERENCES
residential areas, agricultural lands, orchards

FOOD PREFERENCES

caterpillars	flies	Virginia creeper	wild cherry
beetles	spiders	grape	blackberry
earthworms	millipedes	sumac	hackberry
snails	centipedes	holly	persimmon
sowbugs	greenbriar	dogwood	blackgum

Wood Thrush — Hylocichla mustelina

HABITAT PREFERENCES
bottomland deciduous forests with well-developed understory and shrub layers; 400-foot minimum width riparian forest needed for breeding

FOOD PREFERENCES

beetles	snails	grape
ants	earthworms	blackberry
spiders	spicebush	blackgum
grasshoppers	dogwood	mulberry
caterpillars	sumac	blueberry
centipedes		hackberry

Eastern Bluebird — Sialia sialis

HABITAT PREFERENCES
open country, farmlands, field/forest edges

FOOD PREFERENCES

beetles	sowbugs	bayberry
grasshoppers	snails	Virginia creeper
crickets		holly
caterpillars	dogwood	blueberry
centipedes	sumac	hackberry

Blue-gray Gnatcatcher — Polioptila caerulea

HABITAT PREFERENCES

woodland stream edges with brushy growth; brushy, partially open floodplain forests; 450-foot minimum width riparian forest and 60 acres contigious forest needed for breeding

FOOD PREFERENCES

flies	caddisflies
gnats	

Cedar Waxwing — Bombycilla cedrorum

HABITAT PREFERENCES

brushy woodland, agricultural/woodland margins, orchards

FOOD PREFERENCES

beetles	caterpillars	blackberry
ants	red cedar	hackberry
flies	wild cherry	chokeberry
crickets	dogwood	persimmon
mayflies	wild privet	mulberry
grasshoppers	pokeweed	serviceberry

European Starling — Sturnus vulgaris

HABITAT PREFERENCES

suburbs, farmland, orchards, parks, cities

FOOD PREFERENCES

beetles	cherry	elderberry
grasshoppers	sumac	poison ivy
millipedes	bayberry	blackgum
caterpillars	mulberry	

White-eyed Vireo — Vireo griseus

HABITAT PREFERENCES

swampy tickets, brushy areas near water, briar tangles in moist areas; nests three to six feet off the ground

FOOD PREFERENCES

caterpillars	wasps	waxmyrtles
moths	bees	blackberry
beetles	flies	holly
ants	spiders	

Yellow-throated Vireo — Vireo flavifrons

HABITAT PREFERENCES
mature deciduous forests along streams, roadsides; orchards; floodplain forests; 250 acres needed to maintain a breeding population

FOOD PREFERENCES

flying insects	beetles	caterpillars
spiders	ants	

Red-eyed Vireo — Vireo olivaceus

HABITAT PREFERENCES
deciduous forests - open with a good stand of saplings; 250 acres needed to maintain a breeding population

FOOD PREFERENCES

caterpillars	wasps	dogwood
moths	bees	Virginia creeper
beetles	flies	
ants	spiders	

Black-and-white Warbler — Mniotilta varia

HABITAT PREFERENCES
deciduous and coniferous forests with a partly open canopy; 750 acres needed to maintain a breeding population

FOOD PREFERENCES

beetles	flies	caterpillars
weevils	spiders	plant lice
ants	wasps	
moths	harvestmen	

Prothonotary Warbler — Protonotaria citrea

HABITAT PREFERENCES
wooded river swamps, bottomland forests; periodically flooded woodlands; 250 acres needed to maintain a breeding population

FOOD PREFERENCES

ants	beetles	small snails
insect larvae	mayflies	
spiders	caterpillars	

Worm-eating Warbler — Helmitheros vermivorus

HABITAT PREFERENCES
upland deciduous forests with an understory of mountain laurel; 2500 acres contiguous forest needed to maintain a breeding population

FOOD PREFERENCES

caterpillars	beetles	grasshoppers
weevils	spider	

Blue-winged Warbler — Vermivora pinus

HABITAT PREFERENCES
old fields with young trees, swamp margins, stream borders

FOOD PREFERENCES

caterpillars	spiders	insect eggs
grasshoppers		insect larvae

Northern Parula Warbler — Parula americana

HABITAT PREFERENCES
bottomland forests, swamps; 250 acres needed to maintain a breeding population

FOOD PREFERENCES

beetles	ants	spiders
flies	insect larvae	caterpillars
moths	insect eggs	mayflies

Yellow Warbler — Dendroica petechia

HABITAT PREFERENCES
brushy lowlands with scattered small trees along streams and ponds

FOOD PREFERENCES

beetles	caterpillars
weevils	plant lice
moths	spiders
flies	grasshoppers

Yellow-rumped Warbler — Dendroica coronata

HABITAT PREFERENCES
coniferous and mixed forests

FOOD PREFERENCES

beetles	moths	spiders
caterpillars	flies	grasshoppers

Yellow-throated Warbler — Dendroica dominica

HABITAT PREFERENCES
coniferous forests, wet brushy areas; swampy pine woods

FOOD PREFERENCES

beetles	moths and larvae
crickets	grasshoppers
spiders	flies

Pine Warbler — Dendroica pinus

HABITAT PREFERENCES
coniferous forests; 80 acres needed to maintain a breeding population

FOOD PREFERENCES

ants	caterpillars	pine
beetles	grasshoppers	dogwood
spiders	grape	Virginia creeper
flies	bayberry	sumac

Prairie Warbler — Dendroica discolor

HABITAT PREFERENCES
brushy areas in coniferous or mixed stands; abandoned fields with young pines

FOOD PREFERENCES

spiders	beetles
plant lice	flies
grasshoppers	moths

Ovenbird — Seiurus aurocapillus

HABITAT PREFERENCES
open, mature mixed upland forests; dry woods with thin understory/shrub layers; 6500 acres needed to maintain a breeding population; 525-foot minimum width riparian forest needed for breeding

FOOD PREFERENCES

snails	weevils	crickets
slugs	beetles	ants
earthworms	aphids	spiders

Louisiana Waterthrush — Seiurus motacilla

HABITAT PREFERENCES
river swamps, along streams

FOOD PREFERENCES

snails	ants	beetles
slugs	worms	caterpillars

Kentucky Warbler — Oporonis formosus

HABITAT PREFERENCES
bottomland forests; moist deciduous woods with thick, low vegetation; 125 acres contiguous

FOOD PREFERENCES

spiders	ants
beetles	moths
caterpillars	plant lice

Common Yellowthroat — Geothlypis trichas

HABITAT PREFERENCES
woodland edge, hedgerows, marshes, swamps, thick undergrowth along waterways

FOOD PREFERENCES

beetles	moths
grubs	butterflies
larvae	

Yellow-breasted Chat — Icteria virens

HABITAT PREFERENCES
thickets, brushy fields, hedgerows; field/wood edges, overgrown pastures

FOOD PREFERENCES

ants	caterpillars	blackberry
wasps	grasshoppers	blueberry
beetles	spiders	elderberry

Hooded Warbler — Wilsonia citrina

HABITAT PREFERENCES
moist bottomland forests with dense understory; 250 acres contiguous forest needed to maintain a breeding population

FOOD PREFERENCES

grasshoppers	ants	caddisflies
caterpillars	wasps	spiders
plant lice	beetles	
flies	moths	

American Redstart — Setophaga ruticilla

HABITAT PREFERENCES
moist, deciduous forests; upland deciduous forests with good understory of shrubs and young trees; 600-foot minimum width riparian forest needed for breeding

FOOD PREFERENCES

flying insects	caterpillars	ants

House Sparrow — Passer domesticus

HABITAT PREFERENCES
rural, suburban, urban areas

FOOD PREFERENCES

beetles	oats	crabgrass
grasshoppers	corn	knotweed
caterpillars	wheat	bristlegrass
moths	ragweed	

Eastern Meadowlark — Sturnella magna

HABITAT PREFERENCES
cropland, pasture

FOOD PREFERENCES

grasshoppers	ants	wheat
crickets	wasps	bayberry
beetles	spiders	pine
caterpillars	corn	bristlegrass

Red-winged Blackbird — *Agelaius phoeniceus*

HABITAT PREFERENCES
coastal marshes, swamps, ponds, meadows

FOOD PREFERENCES

weevils	ants	corn
beetles	grasshoppers	oats
caterpillars	ragweed	wildrice
grubs	bristlegrass	smartweed

Orchard Oriole — *Icterus spurius*

HABITAT PREFERENCES
cropland, hedgerows, orchards, fields with scattered trees

FOOD PREFERENCES

caterpillars	beetles	cherry
grasshoppers	spiders	blackberry
ants	mulberry	blueberry

Northern Oriole — *Icterus galbula*

HABITAT PREFERENCES
edges of mature deciduous forests

FOOD PREFERENCES

caterpillars	wasps	mulberry
beetles	spiders	blackberry
ants	grasshoppers	

Boat-tailed Grackle — *Quiscalus major*

HABITAT PREFERENCES
marshes, farmland, along shorelines

FOOD PREFERENCES

caterpillars	spiders	ants

Common Grackle — *Quiscalus quiscula*

HABITAT PREFERENCES
agricultural fields, orchards, field borders suburbs

FOOD PREFERENCES

bees	snails	corn
grasshoppers	toads	oats
crickets	salamanders	wheat
spiders	mice	blackberry
earthworms	oak	ragweed

Brown-headed Cowbird — Molothrus ater

HABITAT PREFERENCES
deciduous and coniferous forests, agricultural areas

FOOD PREFERENCES

grasshoppers	bristlegrass	knotweeds
beetles	ragweed	oats
caterpillars	crabgrass	corn
spiders	panic grass	

Scarlet Tanager — Pirango olivacea

HABITAT PREFERENCES
mature deciduous forests, floodplain forests; 250 acres or 600-foot minimum width riparian forest needed to maintain a breeding population

FOOD PREFERENCES

wasps	beetles	blackberry
bees	caterpillars	dogwood
ants	moths	

Summer Tanager — Piranga rubra

HABITAT PREFERENCES
dry upland pine-oak-hickory forests; 250 acres needed to maintain a breeding population

FOOD PREFERENCES

beetles	bees	blackberry
ants	caterpillars	mulberry
wasps		

Northern Cardinal — Cardinalis cardinalis

HABITAT PREFERENCES
hedgerows, woodland margins, thickets in swamp forests; suburbs, parks

FOOD PREFERENCES

caterpillars	grape	mulberry
grasshoppers	smartweed	sumac
beetles	dogwood	blackberry
corn	sedges	tulip poplar

Blue Grosbeak — Guiraca coerulea

HABITAT PREFERENCES
thickets, hedgerows, edges, agricultural areas

FOOD PREFERENCES

beetles	bristlegrass	
caterpillars	wheat	
grasshoppers	panic grass	
ants		

Indigo Bunting — Passerina cyanea

HABITAT PREFERENCES
brushy areas, edges, old fields, woodland clearings

FOOD PREFERENCES

caterpillars	ragweed	blackberry
beetles	bristleweed	elderberry
grasshoppers	farm grain	

House Finch — Carpodacus mexicanus

HABITAT PREFERENCES
suburban and urban areas, farm yards

FOOD PREFERENCES

aphids	knotweed	thistle
caterpillars	chickweed	pigweed

American Goldfinch — Spinus tristis

HABITAT PREFERENCES
old fields, hedgerows, woodland margins, orchards, shrub swamps

FOOD PREFERENCES

aphids	ragweed	sunflowers
caterpillars	thistle	goldenrod
sweetgum	dandelions	

Dark-eyed Junco — Junco hyemalis

HABITAT PREFERENCES
brushy clearings, forest borders, weedy fields

FOOD PREFERENCES

caterpillars	ragweed	grasshoppers
beetles	bristlegrass	panic grass
ants	crabgrass	
wasps	smartweed	

Rufous-sided Towhee — Pipilo erythrophthalmus

HABITAT PREFERENCES
brushy upland forests, thickets, hedgerows, woodland margins; 600-foot minimum width riparian forest needed for breeding

FOOD PREFERENCES

beetles	bees	ragweed
moths	wasps	smartweed
caterpillars	spiders	blackberry
grasshoppers	oak	blueberry
crickets	waxmyrtle	bristlegrass
ants	sedges	panic grass

Grasshopper Sparrow — Ammodramus savannarum

HABITAT PREFERENCES
cropland, old fields, pastures

FOOD PREFERENCES

grasshoppers	spiders	bristlegrass	pigweed
caterpillars	snails	sheepsorral	panic grass
ants	ragweed	oats	knotweed
beetles	plantains	smartweed	sunflowers

Seaside Sparrow — Ammospiza maritima

HABITAT PREFERENCES
grassy tidal marshes

FOOD PREFERENCES

young crabs	snails

Chipping Sparrow — Spizella passerina

HABITAT PREFERENCES
towns and suburbs, agricultural areas, open mixed woods

FOOD PREFERENCES

grasshoppers	ants	crabgrass
caterpillars	wasps	bristlegrass
beetles	spiders	panic grass
leaf hoppers		oats

Field Sparrow — Spizella pusilla

HABITAT PREFERENCES
old fields with scattered shrubs and trees, hedgerows, woodland margins

FOOD PREFERENCES

beetles	ants	broomsedge
grasshoppers	spiders	panic grass
caterpillars	bristlegrass	
leaf hoppers	crabgrass	

White-throated Sparrow — Zonotrichia albicollis

HABITAT PREFERENCES
dense undergrowth and brush

FOOD PREFERENCES

ants	caterpillars	ragweed
beetles	spiders	smartweed
bugs	millipedes	bristlegrass
flies	snails	panicgrass

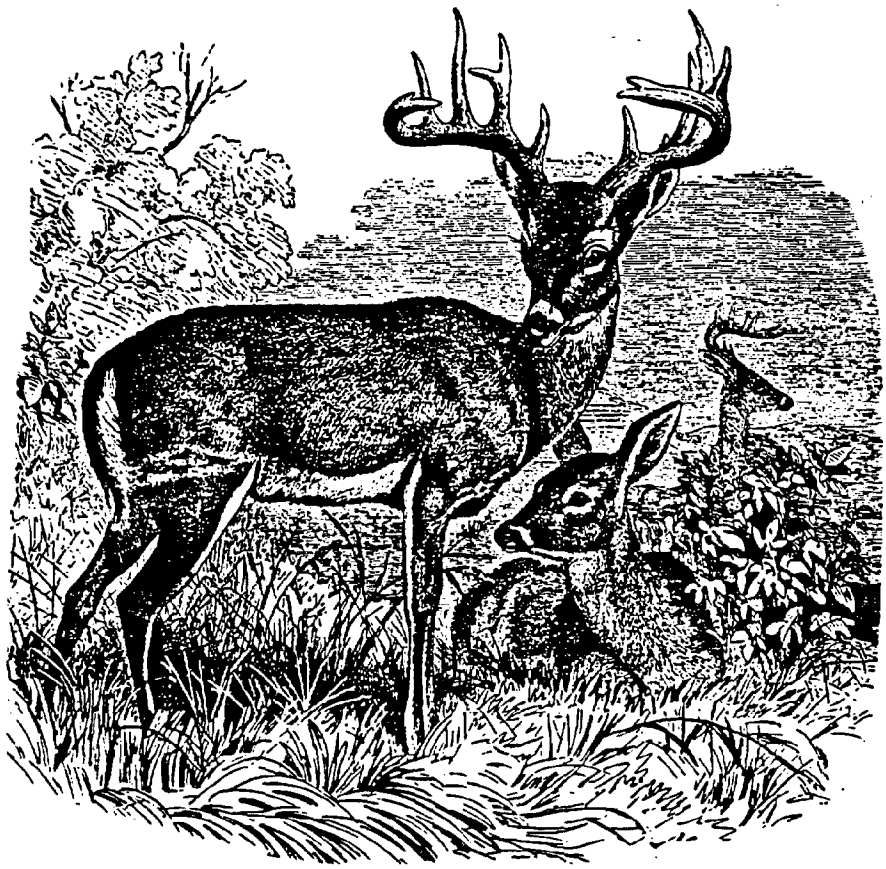
Song Sparrow — Melospiza melodia

HABITAT PREFERENCES
suburbs, old fields with shrubs and small trees, hedgerows, marsh edges

FOOD PREFERENCES

beetles	ants	panicgrass
grasshoppers	smartweed	crabgrass
crickets	bristlegrass	pigweed
caterpillars	ragweed	sedges

MAMMALS



MAMMALS

Blarina brevicauda	short-tailed shrew
Castor canadensis	beaver
Condylura cristata	star-nosed mole
Crytotis parva	least shrew
Didelphis marsupialis	opossum
Eptesicus fuscus	big brown bat
Glaucomys volans	southern flying squirrel
Lasionycterius noctivagans	silver-haired bat
Lasiurus borealis	red bat
Lasiurus cinereus	hoary bat
Lutra canadensis	river otter
Mephitis mephitis	striped skunk
Microsorex Hoyi	pygmy shrew
Microtus pinetorum	woodland vole
Mustela frenata	long-tailed weasel
Mustela vison	mink
Myotis keenii	Keen's myotis
Myotis leibii	small-footed myotis
Myotis lucifungus	little brown myotis
Nycticeius humeralis	evening bat
Odocoileus virginianus	white-tailed deer
Ondatra zibethicus	muskrat
Peromyscus leucopus	White-footed mouse
Pipistrellus subflavus	eastern pipistrelle
Procyon lotor	raccoon
Scalopus aquaticus	eastern mole
Sciurus carolinensis	gray squirrel
Sorex cinereus	masked shrew
Sorex longirostris	southern shrew
Sylvilagus floridanus	eastern cottontail
Synaptomys cooperi	southern bog lemming
Tamias striatus	eastern chipmunk
Vulpes vulpes	red fox
Zapus hudsonius	meadow jumping mouse

MAMMALS

Blarina brevicauda — short-tailed shrew

HABITAT PREFERENCES

forest, grasslands, marshes, brush areas; damp woods with a thick understory

FOOD PREFERENCES

insects	worms
snails	

Castor canadensis — beaver

HABITAT PREFERENCES

mixed hardwood forests with a water source; hardwood and conifer sapings as building material for lodges in slow moving water; dens in high banks near running water; populations equal about two adults per square mile, lodges have 5-7 young

FOOD PREFERENCES

poplar	maple
willow	alder
birch	ash
hazelnut	sweetgum
serviceberry	pine

Condylura cristata — star-nosed mole

HABITAT PREFERENCES

damp areas, tunnels frequently lead to streams or pools; low wet ground near leakes or streams

FOOD PREFERENCES

insects	grubs
earthworms	

Didelphis marsupialis — oppossum

HABITAT PREFERENCES

densely forested areas near water; reproduces in ground burrows, hollow trees and logs, and brush piles

FOOD PREFERENCES

carrion	mice	grape	persimmon
snakes	frogs	oak	blackgum
crayfish	insects	pokeweek	mulberry
		strawberry	blueberry

Eptesicus fuscus — big brown bat

HABITAT PREFERENCES
caves, crevices, hollow trees, wooded areas; building windowsills, eaves of roofs, under awnings

FOOD PREFERENCES
insects

Glaucomys volans — southern flying squirrel

HABITAT PREFERENCES
deciduous or mixed deciduous - coniferous forests, close to water

FOOD PREFERENCES

insects	birds' eggs	beech	hackberry
moths	beetles	oak	maple

Lasionycterius noctivagans — silver-haired bat

HABITAT PREFERENCES
forested areas; wooded areas near ponds and streams

FOOD PREFERENCES
insects

Lasiurus borealis — red bat

HABITAT PREFERENCES
deciduous woodlands, orchards, city parks with trees and tall shrubs

FOOD PREFERENCES
insects

Lasiurus cinereus — hoary bat

HABITAT PREFERENCES
wooded areas; coniferous forests; farmyards and city parks with coniferous trees

FOOD PREFERENCES
insects

Lutra canadensis — river otter

HABITAT PREFERENCES
wooded streams; coastal fresh and salt water marshes

FOOD PREFERENCES

fish	snakes
frogs	toads
crayfish	ducks
water beetles	

Marmota monax — woodchuck

HABITAT PREFERENCES
open woods, edges of brushy woodlands, open fields along streams; dens are usually in gullies or stream beds adjacent to cultivated fields.

FOOD PREFERENCES

clover	honeysuckle
grasses	field crops

Mephitis mephitis — striped skunk

HABITAT PREFERENCES
cultivated areas, forest edges, brushland, brushy borders of streams, rock crevices, hollow logs, population equals one adult per three acres, reproduces in brush piles, culverts, stumps, crevices, often near waterways

FOOD PREFERENCES

insects	spiders	gray	blueberry
toads	frogs	cherry	blackberry
lizards	mice	persimmon	
eggs	grubs		
carrion			

Microsorex hoyi — pygmy shrew

HABITAT PREFERENCES
drier woodlands, grassy clearings, thickets; also moist sphagnum areas

FOOD PREFERENCES

insects	other shrew
mice	

Microtus pinetorum — woodland vole

HABITAT PREFERENCES
forest floor with thick leafy litter; old fields, wood borders, cultivated fields

FOOD PREFERENCES

roots	bulbs
tubers	seeds

Mustela frenata — long-tailed weasel

HABITAT PREFERENCES
fence rows, stone walls, deep grass, brushy field borders, open woodland; woodland bordering fields and pastures

FOOD PREFERENCES

rabbits	mice	rats
shrews	moles	squirrels
birds	eggs	snakes
frogs	fish	

Mustela vison — mink

HABITAT PREFERENCES
along streams, rivers, marshes, wooded areas bordering water

FOOD PREFERENCES

rabbits	mice	squirrels
birds	snakes	frogs
fish	crayfish	

Myotis keenii — Keen's myotis

HABITAT PREFERENCES
caves, building, hollow trees, storm sewers, forested areas

FOOD PREFERENCES
insects

Myotis leibii — small-footed myotis

HABITAT PREFERENCES
caves, rock crevices, in or near forested areas

FOOD PREFERENCES
insects

Myotis lucifungus — little brown myotis

HABITAT PREFERENCES
house attics, hollow trees, caves

FOOD PREFERENCES
insects

Nycticeius humeralis — evening bat

HABITAT PREFERENCES
woodlands, hollow trees, buildings, attics, belfries

FOOD PREFERENCES
insects

Odocoileus virginianus — white-tailed deer

HABITAT PREFERENCES
hardwood mixed forest with a diversity of types and age classes and associated brushland; open brushy areas; wooded margins, glades, population of about 1 and 1/2 adults per acre; reproduction occurs within normal range limits along wood/field margins

FOOD PREFERENCES

browse	fungi	acorns
grasses	wild grapes	berries
maple	oak	sweet fern
mt. laurel	willow	wild cherry
wintergreen	holly	

Ondatra zibethicus — muskrat

HABITAT PREFERENCES
marshes, banks along streams and ponds; borders of marshes with woody and herbaceous vegetation; population equals about 6-8 adults per acre; reproduction sites include stream and pond banks, sometimes houses built of cattails and bulrushes.

FOOD PREFERENCES

clams	frogs	cottonwood	cattail
fish	crayfish	pondweed	arrowhead
insects	snails	waterlily	panicgrass

Peromyscus leucopus — white-footed mouse

HABITAT PREFERENCES
woody, brushy areas, borders of dense woods, preferably deciduous

FOOD PREFERENCES

oak	wild cherry
knotweed	blueberry
maple	pine
tulip poplar	

Pipistrellus subflavus — eastern pipistrelle

HABITAT PREFERENCES
wooded areas near water

FOOD PREFERENCES
insects

Procyon lotor — raccoon

HABITAT PREFERENCES
hardwood forests along streams, lakes; wetlands; grassy freshwater or brackish marshes, swamps; dens are within hollow trees or ground holes

FOOD PREFERENCES

insects	frogs	oak	greenbriar
snakes	mice	holly	persimmon
crayfish	bird eggs	pokeweed	hackberry
		grape	hickory
		beech	grains

Scalopus aquaticus — eastern mole

HABITAT PREFERENCES
moist, sandy loam, lawns, gardens, fields, pastures, thin woods

FOOD PREFERENCES

grubs	insect larvae	vegetable matter
earth worms		

Sciurus carolinensis — gray squirrel

HABITAT PREFERENCES
hardwood forests, older stands preferred; mixed forests with nut-bearing trees and brushy undergrowth; nest in tree cavities or make leaf nests

FOOD PREFERENCES

oak	pine	hickory
blackgum	beech	dogwood
maple	walnut	mulberry
sweetgum	hornbeam	

Sylvilagus floridanus — eastern cottontail rabbit

HABITAT PREFERENCES
variety of habitats including marshes and fields, open woods with underbrush and grassy areas; hedges, briar patches, forest edges; dens are in undisturbed grassy plots near protective cover (i.e. brushy fence row)

FOOD PREFERENCES

crabgrass	goldenrod	clover
red maple	blackberry	wild cherry
plantain	blueberry	sheepsorrel
panic grass		

Sorex cinereus — masked shrew

HABITAT PREFERENCES
moist areas, forests, open areas, brushlands; under fallen logs; in leaf litter, under rock piles, along stream banks.

FOOD PREFERENCES

insects	small mammals

Sorex longirostris — southeastern shrew

HABITAT PREFERENCES
open fields, wood lots, moist areas; bogs, damp woods

FOOD PREFERENCES

insects	small mammals	worms

Synaptomys cooperi — southern bog lemming

HABITAT PREFERENCES
bogs, meadows with heavy vegetation; lake margins, hillsides, open pastures

FOOD PREFERENCES

grass	sedges	clover
buttercups	mosses	fleshy fungi

Tamias striatus — eastern chipmunk

HABITAT PREFERENCES
deciduous forests and brushy areas; open woods, stone walls, half-rotted logs, usually in dry situations

FOOD PREFERENCES

insects	mice	maple	hickory	wild cherry
snails	eggs	oak	hazelnut	blackberry
		beech	dogwood	chinkapin

Vulpes vulpes — red fox

HABITAT PREFERENCES
mixture of open country and forest; sparsely wooded areas, marshes, and streams along farmlands; next in rock cavities, hollow logs, trees

FOOD PREFERENCES

mice	birds	wild cherry	blackberry
insects	rabbits	blueberry	persimmon
rats		grasses	

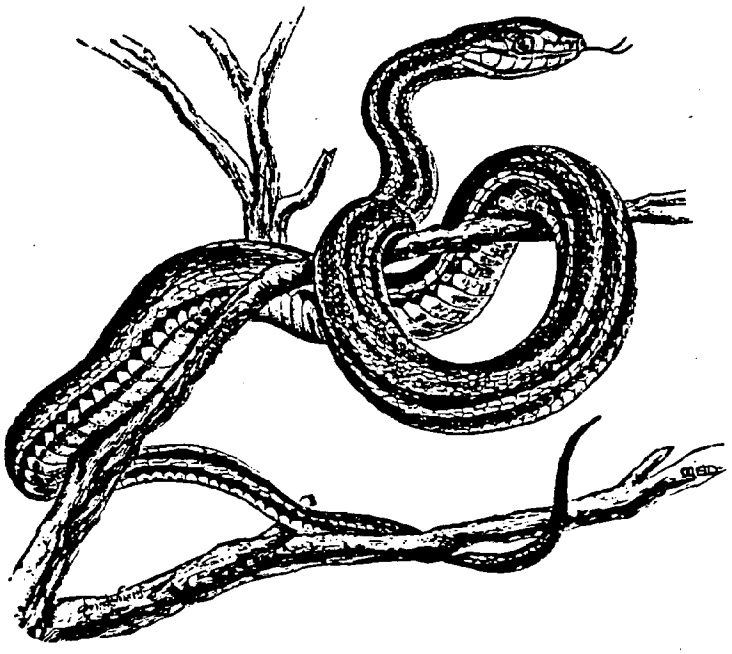
Zapus hudsonius — meadow jumping mouse

HABITAT PREFERENCES
meadow, grassy areas, wet grasslands

FOOD PREFERENCES

seeds	vegetable matter

REPTILES



REPTILES

Agkistrodon contortrix	northern copperhead
Carphophis amoenus	eastern worm snake
Cemophora coccinea	northern scarlet snake
Coluber constrictor	northern backer racer
Diadophis punctatus	northern ringneck snake
Elaphe guttata	corn snake
Elaphe obsoleta	black rat snake
Heterodon platyrhinos	eastern hognose snake
Lampropeltis getulus	eastern kingsnake
Lampropeltis rhombomaculata	mole snake
Lampropeltis triangulum	eastern milk snake
Natrix septemavittata	queen snake
Natrix sipedon	northern water snake
Opheadrys aestivus	rough green snake
Storeria dekayi	northern brown snake
Storeria occipitomaculata	northern red-bellied snake
Thamnophis sauritus	eastern ribbon snake
Thamnophis sirtalis	eastern garter snake
Virginia valeriae	eastern earth snake
Chelydra serpentina	common snapping turtle
Chrysemys picta	eastern painted turtle
Chrysemys rubiventris	red-bellied turtle
Clemmys guttata	spotted turtle
Kinosternon subrubrum	eastern mud turtle
Malaclemys terrapin	diamondback terrapin
Sternotherus odoratus	stinkpot turtle
Terrapene Carolina	eastern box turtle
Cnemidophorus sexlineatus	six-lined racerunner
Eumeces fasciatus	five-lined skink
Eumeces laticeps	broad-headed skink
Leiolopisma laterale	ground skink
Sceloporus undulatus	northern fence lizard

REPTILES

Agkistrodon contortrix — northern copperhead

HABITAT PREFERENCES
deciduous forests near swamps, ponds, streams

FOOD PREFERENCES

mice	insects
small birds	salamanders
lizards	small snakes
frogs	toads

Carphophis amoenus — eastern worm snake

HABITAT PREFERENCES
dry to moist forest, often near swamps or streams; needs loose soil for burrowing; under stones, boards, rotting logs

FOOD PREFERENCES

earthworms	soft-bodies insects
grubs	slugs
insect larvae	

Cemophora coccinea — northern scarlet snake

HABITAT PREFERENCES
sandy, loamy soil, under logs; upland brush, crop and pastureland

FOOD PREFERENCES

mice	small snakes
lizards	snake eggs

Coluber constrictor — northern black racer

HABITAT PREFERENCES
variety, including: wooded areas, fields, cultivated areas; wet lowlands, dry uplands

FOOD PREFERENCES

small mammals	insects
frog	toads
small birds	birds eggs
snakes	lizards

Diadophis punctatus — northern ringneck snake

HABITAT PREFERENCE
moist woodlands with abundant hiding material (i.e., rocks, logs, junk piles)

FOOD PREFERENCES

salamanders	earthworms
small snakes	lizards
frogs	grubs

Elaphe guttata — corn snake

HABITAT PREFERENCES
pine forests, fields, wooded uplands

FOOD PREFERENCES

mice	rats
birds	bats

Elaphe obsoleta — black rat snake

HABITAT PREFERENCES
woodlands, thickets, field edges, farmlands; oak and oak-hickory woods

FOOD PREFERENCES

small mammals	small birds
amphibians	insects
spiders	young opossums
weasels	owls

Heterodon platyrhinos — eastern hognose snake

HABITAT PREFERENCES
sandy areas, dry open fields, pine or deciduous woods

FOOD PREFERENCES

toads	frogs
fish	salamanders
insects	worms

Lampropeltis getulus — eastern kingsnake

HABITAT PREFERENCES
dry areas but near streams or swamps; pine woods, brushy areas, upland pastures, lowland meadows

FOOD PREFERENCES

water snake eggs	turtle eggs
copperheads	lizards
mice	birds

Lampropeltis rhombomaculata — mole snake

HABITAT PREFERENCES
thickets, woodlots, cultivated fields

FOOD PREFERENCES

small rodents	birds
frogs	lizards
other snakes	

Lampropeltis triangulum — eastern milk snake

HABITAT PREFERENCES
brushy or woody cover, pine forests; shores of ponds, streams; near farm buildings, poorly kept orchards and meadows

FOOD PREFERENCES

mice	small mammals
snakes	lizards
birds	birds' eggs
slugs	other snakes

Natrix septemavittata — queen snake

HABITAT PREFERENCES
small stony creeks and rivers

FOOD PREFERENCES
newly molted crayfish
butterfly larvae
moth larvae

Natrix sipedon — northern water snake

HABITAT PREFERENCES
swamp, marsh, bog, borders of streams, ponds

FOOD PREFERENCES

frogs	minnows
salamanders	small mammals
juvenile turtles	

Orpheadrys aestivus — rough green snake

HABITAT PREFERENCES
dense vegetation overhanging stream borders; open woods, unkept or weedy fields

FOOD PREFERENCES

crickets	grasshoppers
spiders	caterpillars

Storeria dekayi — northern brown snake

HABITAT PREFERENCES
open fields, damp woods, swamps, clearings; also urban areas: vacant lots, parks, trash piles

FOOD PREFERENCES

slugs	snails
earthworms	insects
minnows	small toads

Storeria occipitomaculata — northern red-bellied snake

HABITAT PREFERENCES
moist wooded areas, pine or oak-hickory; near or in sphagnum bogs

FOOD PREFERENCES

slugs	earthworms
soft insects	insect larvae
sowbugs	small salamanders

Thamnophis sauritus — eastern ribbon snake

HABITAT PREFERENCES
stream edges, swampy areas, wet meadows, ponds, bogs, fields near streams

FOOD PREFERENCES

frogs	toads
salamanders	mice
spiders	small fish
insects	

Thamnophis sirtalis — eastern garter snake

HABITAT PREFERENCES
forest edges, meadows, stream edges, marshes, woodlands, hillsides, vacant lots

FOOD PREFERENCES

earthworms	amphibians	rodents
carrion	fish	slugs
leeches	caterpillars	other snakes
insects	small birds	crayfish

Virginia valeriae — eastern earth snake

HABITAT PREFERENCES
abandoned fields, trails, back roads near deciduous forests

FOOD PREFERENCES

earthworms	termites	ants

Chelydra serpentina — common snapping turtle

HABITAT PREFERENCES
permanent or semipermanent bodies of freshwater; marshes, swamps, bogs, pools, streams; areas with soft muddy banks or bottoms

FOOD PREFERENCES

fish	small aquatic invertebrates
reptiles	birds
mammals	carrion
vegetation	crayfish

Chrysemys picta — eastern painted turtle

HABITAT PREFERENCES
shallow water with aquatic vegetation, soft and muddy bottom; woodland pools, wet meadows, ditches, slow-moving streams

FOOD PREFERENCES

aquatic vegetation	insects
crayfish	small fish
tadpoles	carrion

Chrysemys rubiventris — red-bellied turtle

HABITAT PREFERENCES
large bodies of waters with basking sites; streams, rivers, ponds, marshes, brackish water

FOOD PREFERENCES

snail	tadpoles
crayfish	aquatic vegetation

Clemmys guttata — spotted turtle

HABITAT PREFERENCES
woodland streams, wet meadows, marshes, swamps, roadside ditches, small ponds, bogs

FOOD PREFERENCES

crustaceans	spiders
eathworms	aquatic insects
frogs	tadpoles
small fish	aquatic vegetation

Kinosternon subrubrum — eastern mud turtle

HABITAT PREFERENCES
semi-aquatic, slow-moving water with soft bottoms and abundant aquatic vegetation; ditches, wet meadows, small ponds, marshes

FOOD PREFERENCES

insects	snails
crayfish	tadpoles

Malaclemys terrapin — diamondback terrapin

HABITAT PREFERENCES
coastal marshes, tidal flats, estuaries, unpolluted, sheltered brackish marshes

FOOD PREFERENCES

marine snails	clams	
worms		

Sternotherus odoratus — stinkpot turtle

HABITAT PREFERENCES
slow-moving water with soft bottom; fresh water; streams, ponds, swamps

FOOD PREFERENCES

snails	clams	tadpoles
aquatic insects	insect larvae	fish eggs
minnows	worms	aquatic vegetation

Terrapene carolina — common box turtle

HABITAT PREFERENCES
terrestrial, woodland, field edges, thickets, pastures, marshes, bogs, well-drained forest bottomland

FOOD PREFERENCES

earthworms	slugs	leaves
snails	insects	grass
insect larvae	crayfish	berries
frogs	toads	fruits
snakes	carrion	fungi

Cnemidophorus sexlineatus — six-lined racerunner

HABITAT PREFERENCES
open, well-drained areas - fields, open woods, thicket margins - with sandy or loose soils

FOOD PREFERENCES
insects

Eumeces fasciatus — five-lined skink

HABITAT PREFERENCES
cut-over woodlots with rotting stumps and logs; damp environment; open or moderately dense wooded areas

FOOD PREFERENCES
insects, spiders, snails, grubs, lizards, small mammals

Eumeces laticeps — broad-headed skink

HABITAT PREFERENCES
woodlands to empty urban lots with debris

FOOD PREFERENCES
insects, paper wasp pupae

Leiolopisma laterale — ground skink

HABITAT PREFERENCES
dry wooded areas, under dead leaves, decaying wood, and debris

FOOD PREFERENCES
insects, spiders

Sceloporus undulatus — northern fence lizard

HABITAT PREFERENCES
pine woods, rotting logs, piles of logs, fences, brush heaps

FOOD PREFERENCES
insects, spiders, snails, centipedes, beetles

AMPHIBIANS

AMPHIBIANS

Acris crepitans	northern cricket frog
Bufo americanus	American toad
Bufo woodhousei	Fowler's toad
Hyla chrysoscelis	southern gray treefrog
Hyla cinerea	green treefrog
Hyla crucifer	northern spring peeper
Hyla veriscolor	eastern gray treefrog
Pseudacris triseriata	upland chorus frog
Rana catesbeiana	bullfrog
Rana clamitans	green frog
Rana palustris	pickerel frog
Rana sphenocephala	southern leopard frog
Rana sylvatica	wood frog

Ambystoma maculatum	spotted salamander
Ambystoma opacum	marbled salamander
Ambystoma tigrinum	eastern tiger salamander
Desmognathus fuscus	northern dusky salamander
Eurycea bislineata	no. two-lined salamander
Hemidactylium scutatum	four-toed salamander
Notophthalmus viridescens	red-spotted newt
Plethodon cinereus	red-backed salamander
Pseudotriton montanus	eastern mud salamander
Pseudotriton ruber	northern red salamander

AMPHIBIANS

Acris crepitans — northern cricket frog

HABITAT PREFERENCES
in or near permanent bodies of shallow water with emergent and shoreline vegetation

FOOD PREFERENCES
small adult insects
insect larvae

Bufo americanus — American toad

HABITAT PREFERENCES
almost any habitat - gardens, woods, yards - with moisture and shallow water bodies for breeding

FOOD PREFERENCES

insects	sowbugs
spiders	centipedes
millipedes	slugs

Bufo woodhousi — Fowler's toad

HABITAT PREFERENCES
lowland areas with sandy soils, pine and oak forests, fields, small marshy ponds

FOOD PREFERENCES

ants	beetles
earthworms	spiders
snails	slugs

Hyla chrysoscelis — southern gray treefrog

HABITAT PREFERENCES
small trees or shrubs near or in shallow water bodies

FOOD PREFERENCES
insects
spiders
snails

Hyla cinerea — green treefrog

HABITAT PREFERENCES
swamps, lake and stream borders, floating vegetation

FOOD PREFERENCES
flying arboreal insects

Hyla crucifer — northern spring peeper

HABITAT PREFERENCES
marshy or wet woods, second-growth woodlots, sphagnum bogs; breeds in permanent or temporary water

FOOD PREFERENCES

ants	flying bugs	flies
springtails	mites	ticks
beetles	spiders	small snails

Hyla versicolor — eastern gray treefrog

HABITAT PREFERENCES
wooded bodies of water, small trees and shrubs in or near water; breeds in permanent or temporary water bodies

FOOD PREFERENCES

spiders	small insects	plant lice
mites	snails	

Pseudacris triseriata — upland chorus frog

HABITAT PREFERENCES
moist woodlands, swamps, near ponds, bogs, marshes; breeds in marshy areas or shallow pools

FOOD PREFERENCES
small adult insects — insect larvae

Rana catesbeiana — bullfrog

HABITAT PREFERENCES
water's edge or within shoreline vegetation of large bodies o water; breeds close to shoreline within shrubs

FOOD PREFERENCES

fish	small animals	newts
salamanders	mites	snakes
snails	insects	spiders
other frogs	small birds	young turtles

Rana clamitans — green frog

HABITAT PREFERENCES
near shallow fresh water, woodland streams, springs, vernal pools, moist woodlands near water

FOOD PREFERENCES

insects	insect larvae	spiders
small fish	flies	small frogs
newts	grasshoppers	beetles
caterpillars	worms	crayfish

Rana palustris — pickerel frog

HABITAT PREFERENCES
sphagnum bogs, meadow streams, springs, water with thick vegetation at the edges

FOOD PREFERENCES

arthropods	aquatic amphipods	isopods
small crayfish	snails	

Rana sphenocephala — southern leopard frog

HABITAT PREFERENCES
shallow, freshwater areas, ponds, swamps, slightly brackish marshes

FOOD PREFERENCES

insects	small snakes
worms	small frogs

Rana sylvatica — wood frog

HABITAT PREFERENCES
in or near moist wooded areas, needs shallow water for breeding

FOOD PREFERENCES

insects	beetles	flies
spiders	snails	slugs

Scaphiopus holbrooki — eastern spadefoot toad

HABITAT PREFERENCES
open forested areas with sandy or loose soils; needs temporary pools for breeding

FOOD PREFERENCES

flies	spiders	crickets
caterpillars	moths	earthworms
snails	true bugs	

Ambystoma maculatum — spotted salamander

HABITAT PREFERENCES
shallow woodland ponds or marshy pools; moist deciduous or mixed forest with slow-moving water for breeding

FOOD PREFERENCES

snails	earthworms	insects
spiders	slugs	beetles

Ambystoma opacum — marbled salamander

HABITAT PREFERENCES
sandy areas of mixed deciduous woods, especially oak-maple and oak-hickory forests; breeds in low areas near ponds, swamps and streams

FOOD PREFERENCES

earthworms	larval insects	mollusks
crustaceans	adult insects	

Ambystoma tigrinum — eastern tiger salamander

HABITAT PREFERENCES
ponds in depressions close to hardwood forests with dense understory and loose soil for burrowing

FOOD PREFERENCES

insects	earthworms
amphibians	small mice

Desmognathus fuscus — northern dusky salamander

HABITAT PREFERENCES
woodland margins of streams and springs with stones, leaves, debris, etc. for cover.

FOOD PREFERENCES

insects	grubs	worms
crustaceans	spiders	larval salamanders

Eurycea bislineata — two-lined salamander

HABITAT PREFERENCES
moist forest floors, along streams, bogs, near springs and seeps

FOOD PREFERENCES

insects	stonefly nymphs	mayflies
earthworms	spiders	millipedes
mites	beetle larvae	sowbugs

Hemidactylium scutatum — four-toed salamander

HABITAT PREFERENCES
associated with sphagnum bogs; shaded shallow woodland pools, preferably acidic

FOOD PREFERENCES

insects	small invertabrates
spiders	earthworms

Notophthalmus viridescens — red-spotted newt

HABITAT PREFERENCES
ponds, marshes, quiet streams with submerged vegetation and located within deciduous or mixed forests

FOOD PREFERENCES

mayflies	caddishflies	midges
springtails	tadpoles	mosquito larvae
worms	frog eggs	leeches
spiders	mites	snails

Plethodon cinereus — red-backed salamander

HABITAT PREFERENCES
forested areas, mixed deciduous or coniferous; abundant beneath old logs, bark, moss, stones

FOOD PREFERENCES

snails	small insects	slugs
earthworms	spiders	sowbugs
mites	millipedes	

Pseudotriton montanus — eastern mud salamander

HABITAT PREFERENCES
muddy seeps along streams, springs; hides under logs, bark, etc.

FOOD PREFERENCES

insects	other salamanders
insect larvae	dusky salamanders

Pseudotriton ruber — northern red salamander

HABITAT PREFERENCES
wooded streams as well as streams in open fields and meadows; stream bottoms of sand, gravel, rocks preferred

FOOD PREFERENCES
earthworms

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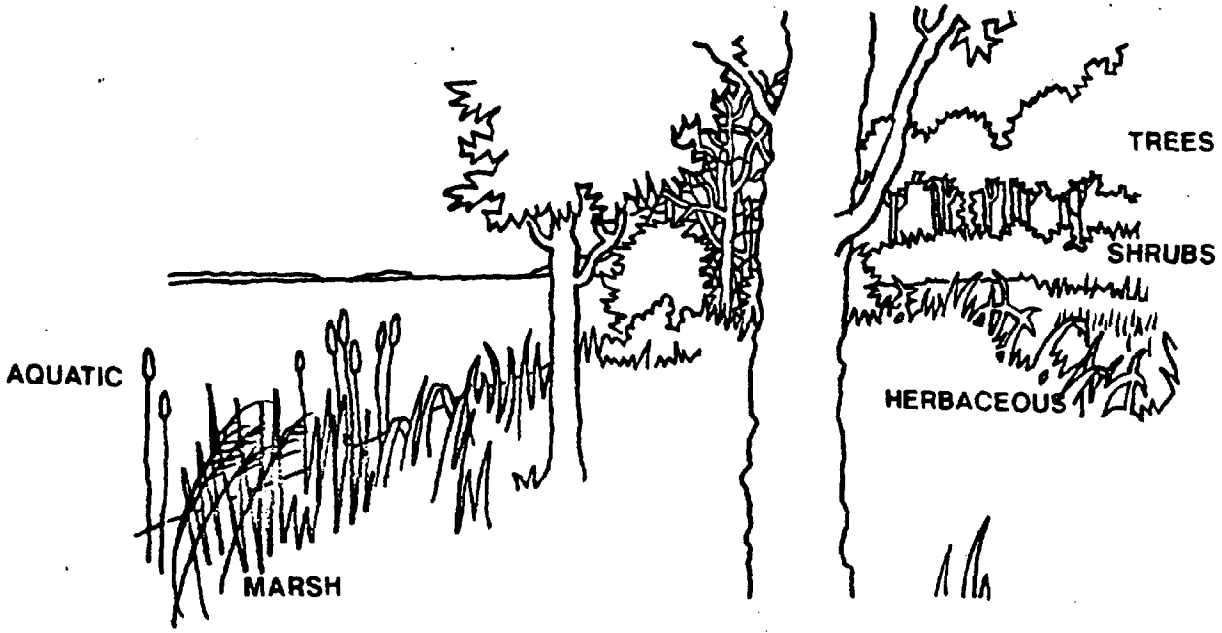
CHAPTER 4

WILDLIFE PLANT FOOD SPECIES



WILDLIFE PLANT FOOD SPECIES

TREES

Acer	maple
Alnus	alder
Betula	birch
Carpinus carolinensis	ironwood
Carya	hickory
Celtis	hackberry
Cornus	dogwood
Crataegus	hawthorn
Diospyros	persimmon
Fagus grandifolia	American beech
Fraxinus	ash
Ilex	holly
Juglans	walnut
Juniperus	cedar, juniper
Liquidambar styraciflua	sweetgum
Liriodendron tulipifera	tulip poplar
Magnolia	magnolia
Morus	mulberry
Nyssa sylvatica	blackgum
Ostrya virginiana	hornbeam
Pinus	pine
Platanus	sycamore
Populus	aspen, poplar
Prunus	cherry, plum
Quercus	oak
Salix	willow
Sassafras albidum	sassafras
Ulmus	elm

Acer	maple
bobwhite quail	raccoon
Carolina chickadee	flying squirrel
purple finch	gray squirrel
goldfinch	chipmunk
beaver	white-footed mouse
cottontail rabbit	white-tailed deer
Alnus	adler
goldfinch	beaver
white-tailed deer	
Betula	birch
purple finch	cottontail rabbit
beaver	chipmunk
white-tailed deer	

Carpinus caroliniana
purple finch
downy woodpecker

Carya
wood duck
crow
bluejay
white-breasted nuthatch
red-bellied woodpecker
white-tailed deer

Celtis
bobwhite quail
eastern bluebird
cardinal
catbird
common crow
fish crow
yellow-shafted flicker
mockingbird
eastern phoebe
robin
starling

Cornus
wood duck
bobwhite quail
bluebird
cardinal
crow
catbird
purple finch
flicker
crested flycatcher
kingbird
mockingbird
robin
starling
scarlet tanager
brown thrasher
white-tailed deer

Crataegus
robin
cedar waxwing
beaver
gray fox

ironwood
white-footed mouse
white-tailed deer

hickory
gray fox
cottontail rabbit
gray squirrel
chipmunk
white-footed mouse

hackberry
brown thrasher
tufted titmouse
towhee
cedar waxwing
beaver
opossum
skunk
flying squirrel
white-tailed deer
raccoon
gray fox

dogwood
wood thrush
red-eyed vireo
cedar waxwing
downy woodpecker
red-bellied woodpecker
pileated woodpecker
pine warbler
hairy woodpecker
beaver
cottontail rabbit
raccoon
gray squirrel
skunk
chipmunk
white-footed mouse

hawthorn
raccoon
gray squirrel
white-tailed deer
cottontail rabbit

Diospyros	persimmon
catbird	opossum
mockingbird	raccoon
cedar waxwing	white-tailed deer
gray fox	red fox
Fagus grandifolia	American beech
wood duck	red-bellied woodpecker
chickadee	hairy woodpecker
purple finch	beaver
grackle	gray fox
bluejay	red fox
white-breasted nuthatch	raccoon
tufted titmouse	flying squirrel
downy woodpecker	gray squirrel
hairy woodpecker	chipmunk
white-footed mouse	white-tailed deer
Fraxinus	ash
wood duck	beaver
bobwhite quail	white-footed mouse
cardinal	white-tailed deer
purple finch	cedar waxwing
Ilex	holly
mourning dove	brown thrasher
bobwhite quail	towhee
bluebird	white-eyed vireo
catbird	cedar waxwing
common flicker	pileated woodpecker
bluejay	raccoon
mockingbird	skunk
phoebe	gray squirrel
robin	white-footed mouse
wood thrush	white-tailed deer
Juglans	walnut
red-bellied woodpecker	gray squirrel
beaver	
Juniperus	cedars, junipers
bobwhite quail	thrush
bluebird	myrtle warbler
catbird	cedar waxwing
purple finch	beaver
yellow-shafted flicker	gray fox
mockingbird	opossum
robin	chipmunk
starling	meadow mouse
brown thrasher	white-footed mouse
tree swallow	white-tailed deer

Liquidambar styraciflua	sweetgum
mallard duck	Carolina wren
bobwhite quail	towhee
Carolina chickadee	beaver
purple finch	gray squirrel
goldfinch	chipmunk
Liriodendron tulipifera	tulip poplar
redwinged blackbird	ruby-throated hummingbird
cardinal	beaver
Carolina chickadee	gray squirrel
purple finch	white-footed mouse
goldfinch	white-tailed deer
Magnolia	magnolia
towhee	white-footed mouse
red-eyed vireo	white-tailed deer
gray squirrel	
Morus	mulberry
cardinal	scarlet tanager
catbird	summer tanager
common crow	brown thrasher
fish crow	wood thrush
crested flycatcher	tufted titmouse
grackle	cedar waxwing
bluejay	red-bellied woodpecker
mockingbird	red fox
Baltimore oriole	opossum
orchard oriole	raccoon
robin	skunk
starling	gray squirrel
Nyssa sylvatica	blackgum
wood duck	tufted titmouse
bobwhite quail	red-eyed vireo
bluebird	cedar waxwing
crow	hairy woodpecker
purple finch	red-bellied woodpecker
flicker	pileated woodpecker
mockingbird	beaver
robin	gray fox
starling	opossum
scarlet tanager	gray squirrel
brown thrasher	white-tailed deer
wood thrush	raccoon
Ostrya virginiana	hornbeam
wood duck	red fox
bobwhite quail	gray fox
beaver	cottontail rabbit
white-tailed deer	

Pinus	pine
mourning dove	towhee
bobwhite quail	red-bellied woodpecker
Carolina chickadee	Carolina wren
house finch	beaver
goldfinch	cottontail rabbit
meadowlark	gray squirrel
nuthatch	red squirrel
English sparrow	chipmunk
brown thrasher	white-footed mouse
tufted titmouse	white-tailed deer
Platanus	sycamore
purple finch	beaver
goldfinch	
Populus	aspen, poplar
purple finch	beaver
muskrat	cottontail rabbit
white-tailed deer	
Prunus	wild cherry, plum
bobwhite quail	towhee
bluebird	red-eyed vireo
cardinal	cedar waxwing
catbird	pileated woodpecker
crow	hairy woodpecker
flicker	red-bellied woodpecker
crested flycatcher	beaver
grackle	gray fox
bluejay	red fox
kingbird	opossum
mockingbird	cottontail rabbit
Baltimore oriole	raccoon
robin	skunk
starling	gray squirrel
summer tanager	chipmunk
scarlet tanager	meadow mouse
brown thrasher	white-footed mouse
wood thrush	white-tailed deer
Quercus	oak
mallard duck	red-bellied woodpecker
wood duck	Carolina wren
clapper rail	beaver
bobwhite quail	red fox
common crow	gray fox
yellow-shafted flicker	muskrat
purple grackle	opossum
bluejay	cottontail rabbit
horned lark	raccoon
meadowlark	flying squirrel

Quercus (continued)	
white-breasted nuthatch	chipmunk
starling	meadow mouse
brown thrasher	white-footed mouse
tufted titmouse	white-tailed deer
downy woodpecker	gray squirrel
Salix	willow
beaver	white-tailed deer
cottontail rabbit	gray squirrel
meadow mouse	
Sassafras albidum	sassafras
bobwhite quail	towhee
catbird	red-eyed vireo
flicker	white-eyed vireo
crested flycatcher	pileated woodpecker
kingbird	yellow-throated warbler
mockingbird	beaver
eastern phoebe	white-tailed deer
brown thrasher	
Ulmus	elm
wood duck	beaver
English sparrow	muskrat
Carolina chickadee	cottontail rabbit
purple finch	gray squirrel
eastern goldfinch	yellow-bellied sapsucker

SHRUBS

Amelanchier	serviceberry, juneberry
Aralia	devil's walking stick
Aronia	chokeberry
Cephalanthus occidentalis	buttonbush
Comptonia peregina	sweet fern
Forestiera	wild privet
Gaylussacia	huckleberry
Kalmia latifolia	mountain laurel
Lindera	spicebush
Myrica	waxmyrtle, bayberry
Rhododendron	rhododendron
Rhus	sumac
Rosa	wild rose
Rubus	blackberry, raspberry
Sambucus	elderberry
Toxicodendron	poison ivy, poison oak
Vaccinium	blueberry
Viburnum	blackhaw, arrowwood

Amelanchier	serviceberry
bluebird	tufted titmouse
cardinal	cedar waxwing
catbird	downy woodpecker
crow	hairy woodpecker
common flicker	beaver
bluejay	red fox
mockingbird	skunk
Baltimore oriole	flying squirrel
scarlet tanager	chipmunk
brown thrasher	white-footed mouse
brown thrush	white-tailed deer
wood thrush	

Aralia	devil's walking stick
wood thrush	skunk
red fox	chipmunk

Aronia	chokeberry
meadowlark	cottontail rabbit
cedar waxwing	white-footed mouse
red fox	white-tailed deer

Cephalanthus occidentalis	buttonbush
mallard duck	beaver
wood duck	white-tailed deer
Virginia rail	

Comptonia peregrina	sweetfern
cottontail rabbit	white-tailed deer

Forestiera	wild privet
mallard duck	robin
wood duck	white-tailed deer
Gaylussacia	huckleberry
bobwhite quail	scarlet tanager
catbird	gray fox
orchard oriole	white-tailed deer
Kalmia latifolia	mountain laurel
white-tailed deer	
Lindera	spicebush
bobwhite quail	robin
catbird	wood thrush
crested flycatcher	red-eyed vireo
eastern kingbird	
Myrica	wax myrtle, bayberry
bobwhite quail	phoebe
bluebird	starling
catbird	scarlet tanager
Carolina chickadee	brown thrasher
common crow	tufted titmouse
fish crow	towhee
yellow shafted flicker	white-eyed vireo
grackle	red-bellied woodpecker
meadowlark	Carolina wren
mockingbird	gray fox
tree swallow	white-tailed deer
Rhododendron	rhododendron
white-footed mouse	white-tailed deer
Rhus	sumac
bobwhite quail	mockingbird
bluebird	robin
cardinal	scarlet tanager
catbird	brown thrasher
common crow	red-eyed vireo
fish crow	pine warbler
purple finch	cottontail rabbit
common flicker	white-tailed deer
Rosa	wild rose
bobwhite quail	skunk
beaver	white-footed mouse
cottontail rabbit	white-tailed deer
Rubus	blackberry, raspberry
bobwhite quail	scarlet tanager
redwinged blackbird	summer tanager

VINES

Gaultheria procubens	wintergreen
Lonicera japonica	Japanese honeysuckle
Mitchella repens	partridgeberry
Parthenocissus	Virginia creeper
Smilax	greenbriar
Vitis	grape

Gaultheria procumbens — wintergreen
- white-footed mouse
- white-tailed deer

Lonicera japonica — Japanese honeysuckle
- bobwhite quail
- bluebird
- purple finch
- goldfinch
- robin
- cottontail rabbit
- white-tailed deer

Mitchella repens — partridgeberry
- bobwhite quail
- red fox
- skunk
- white-footed mouse

Parthenocissus — Virginia creeper
- bluebird
- catbird
- chickadee
- crow
- flicker
- crested flycatcher
- mockingbird
- robin
- tree swallow
- starling
- brown thrasher
- wood thrush
- tufted titmouse
- red-eyed vireo
- white-eyed vireo
- downy woodpecker
- hairy woodpecker
- pileated woodpecker
- red-bellied woodpecker
- red fox
- skunk

Smilax — greenbriar
- wood duck
- cardinal
- catbird
- common crow
- fish crow
- yellow-shafted flicker
- mockingbird
- robin
- sparrow
- brown thrasher
- cedar waxwing
- pileated woodpecker
- beaver
- opossum
- cottontail rabbit
- raccoon
- gray squirrel
- white-tailed deer

Vitis — grapevine
- wood duck
- bobwhite quail
- bluebird
- starling
- scarlet tanager
- summer tanager

HERBACEOUS PLANTS

Amaranthus	pigweeds
Ambrosia	ragweeds
Andropogon	broomsedge, bluestem
Carex	sedges
Commelina	dayflowers
Desmondium	beggarweeds
Euphorbia	spurges
Fragaria	strawberries
Helianthus	sunflowers
Impatiens	jewelweeds
Lespedeza	lespedeza
Melilotus	sweet clover
Panicum	panic grass
Phytolacca americana	pokeweed
Polygonum	knotweeds
Ranunculus	buttercups
Rumex	sheepsorrel, dock
Solanum	nightshades
Solidago	goldenrods
Stellaria media	chickweed
Taraxacum	dandelions
Trifolium	clovers

Amaranthus — pigweed

mourning dove	field sparrow
bobwhite quail	grasshopper sparrow
house finch	song sparrow
horned lark	cottontail rabbit
chipping sparrow	

Ambrosia — ragweed

mourning dove	chipping sparrow
bobwhite quail	field sparrow
woodcock	grasshopper sparrow
redwinged blackbird	song sparrow
indigo bunting	starling
cardinal	tufted titmouse
goldfinch	cedar waxwing
grackle	cottontail rabbit
horned lark	chipmunk
meadowlark	white-tailed deer
robin	

Andropogon — broomsedge, bluestem

chipping sparrow	white-tailed deer
field sparrow	

Carex — sedges

black duck	horned lark
mallard duck	grasshopper sparrow

Carex (continued)	
wood duck	song sparrow
clapper rail	gray squirrel
Virginia rail	common mole
woodcock	chipmunk
cardinal	white-tailed deer
house finch	
Commelina	dayflower
mourning dove	cardinal
bobwhite quail	white-tailed deer
redwinged blackbird	
Desmodium	beggarweeds
bobwhite quail	white-tailed deer
white-footed mouse	
Euphorbia	spurges
mourning dove	chipping sparrow
bobwhite quail	horned lark
Fragaria	strawberry
crow	cottontail rabbit
catbird	skunk
brown thrasher	chipmunk
cedar waxwing	white-footed mouse
opossum	white-tailed deer
Helianthus	sunflower
mourning dove	meadowlark
bobwhite quail	grasshopper sparrow
redwinged blackbird	tufted titmouse
cowbird	muskrat
crow	chipmunk
house finch	white-footed mouse
goldfinch	white-tailed deer
horned lark	
Impatiens	jewelweed
bobwhite quail	white-footed mouse
hummingbird	
Lespedeza	bush clover
mourning dove	white-tailed deer
bobwhite quail	
Melilotus	sweet clover
muskrat	white-tailed deer
cottontail rabbit	
Panicum	panic grass
Canada goose	meadowlark
mourning dove	chipping sparrow

Panicum (continued)	
bobwhite quail	field sparrow
woodcock	grasshopper sparrow
redwinged blackbird	song sparrow
cardinal	pine warbler
cowbird	muskrat
dicksissel	cottontail rabbit
blue grosbeak	white-tailed deer
horned lark	
Phytolacca americana	pokeweed
mourning dove	robin
bluebird	starling
cardinal	brown thrasher
catbird	cedar waxwing
fish crow	hairy woodpecker
yellow-breasted chat	gray fox
kingbird	red fox
mockingbird	opossum
crested flycatcher	raccoon
phoebe	white-footed mouse
Polygonum	knotweed, smartweed
mourning dove	horned lark
bobwhite quail	grasshopper sparrow
woodcock	song sparrow
redwinged blackbird	chipmunk
cowbird	white-footed mouse
house finch	
Ranunculus	buttercup
wood duck	skunk
muskrat	gray squirrel
cottontail rabbit	chipmunk
Rumex	sheepsorrel, dock
Canada goose	field sparrow
bobwhite quail	grasshopper sparrow
woodcock	song sparrow
redwinged blackbird	cottontail rabbit
cowbird	white-footed mouse
Solanum	nightshades
wood duck	mockingbird
bobwhite quail	song sparrow
cardinal	raccoon
catbird	skunk
meadowlark	
Solidago	goldenrod
goldfinch	cottontail rabbit
beaver	white-tailed deer

Stellaria media	chickweed
mourning dove	horned lark
bobwhite quail	song sparrow
house finch	chipping sparrow
goldfinch	cottontail rabbit
Taraxacum	dandelion
bobwhite quail	cottontail rabbit
goldfinch	chipmunk
chipping sparrow	white-tailed deer
Trifolium	clover
bobwhite quail	raccoon
horned lark	skunk
beaver	woodchuck
muskrat	white-tailed deer
cottontail rabbit	

MARSH AND AQUATIC PLANTS (not submerged)

Cyperus	sedges
Distichlis	salt grass
Echinochloa	wild millet
Eleocharis	spikerushes
Peltandra virginica	arrow-arum
Polygonum	smartweeds
Ponterderia cordata	pickerelweed
Sagittaria	arrowheads
Scirpus	bulrushes
Sparganium	burreeds
Spartina	cordgrass
Typha	cattails
Zizania aquatica	wild rice

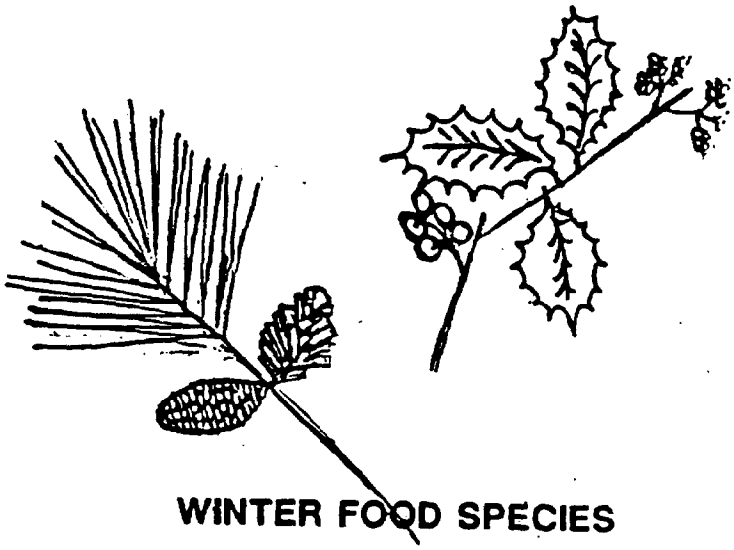
Cyperus	sedge
mallard duck	redwinged blackbird
woodcock	grackle
Distichlis	salt grass
black duck	white-tailed deer
Canada goose	
Echinochloa	wild millet
black duck	Virginia rail
mallard duck	cottontail rabbit
Canada goose	muskrat
Peltandra virginica	arrow-arum
wood duck	
Polygonum	smartweed, knotweed
black duck	redwinged blackbird
mallard duck	cardinal
wood duck	horned lark
Canada goose	meadowlark
bobwhite quail	muskrat
chipping sparrow	raccoon
grasshopper sparrow	chipmunk
song sparrow	
Pontederia cordata	pickerelweed
black duck	muskrat
wood duck	
Sagittaria	arrowhead
black duck	wood duck
mallard duck	muskrat

Scirpus	bulrush
black duck	Virginia rail
mallard duck	redwinged blackbird
Canada goose	song sparrow
clapper rail	muskrat
Sparganium	burreed
black duck	Virginia rail
mallard duck	muskrat
wood duck	
Spartina	cordgrass
black duck	Virginia rail
mallard duck	muskrat
Canada goose	white-tailed deer
clapper rail	
Typha	cattail
Canada goose	muskrat
Zizania aquatica	wild rice
black duck	redwinged blackbird
mallard duck	fish crow
wood duck	song sparrow
Virginia rail	

CHAPTER 5

MISCELLANEOUS PLANT LISTS

HEDGEROW PLANTS



WINTER FOOD SPECIES

DISTURBANCE INDICATORS

WETLAND INDICATORS

COMMON HEDGEROW PLANTS THAT PROVIDE WILDLIFE COVER AND FOOD

TREES

Cornus florida	flowering dogwood
Crataegus	hawthorn
Diospyros virginiana	persimon
Juniperus virginiana	red cedar
Liquidambar styraciflua	sweet gum
Nyssa sylvatica	blackgum
Prunus	wild cherry, plum
Quercus	oak
Rhus	sumac
Sassafras albidum	sassafras
Ulmus americana	elm

SHRUBS AND VINES

Aronia	chokeberry
Corylus	hazelnut
Lonicera japonica	Japanese honeysuckle
Parthenocissus	Virginia creeper
Rosa	wild rose
Rubus	blackberry, raspberry
Sassafras albidum	elderberry
Viburnum	blackhaw, arrowwood
Vitis	wildgrape

HERBACEOUS PLANTS

Achillea millefolium	yarrow
Andropogon virginicus	broomsedge
Arctium	burdock
Asclepias	asters
Daucus carota	wild carrot
Leonurus cardiaca	motherwort
Phytolacca americana	pokeweed
Solidago	goldenrod
Veronia	ironweed

FRUITS AND SEEDS AVAILABLE TO WILDLIFE OVER WINTER

Amaranthus	pigweed
Ambrosia	ragweed
Andropogon virginicus	broomsedge
Celtis	hackberry
Diospyros virginiana	persimmon
Ilex opaca	American holly
Juniperus virginiana	red cedar
Lonicera japonica	Japanese honeysuckle
Pinus	pine trees
Rhus	sumac
Symphorocarphos	snowberry, coralberry

PLANTS INDICATIVE OF DISTURBED SOILS IN ANNE ARUNDEL COUNTY

WOODY (TREES AND SHRUBS)

Acer negundo	box elder
Ailanthis altissima	tree-of-heaven
Albizzia julibrissin	pink powder puff
Bamboo	
Campsis radicans	trumpet creeper
Lonicera japonica	Japanese honeysuckle
Morus alba	white mulberry
Parthenocissus quinquefolia	Virginia creeper
Paulownia tomentosa	empress tree
Pinus virginiana	scrub pine
Prunus serotina	wild black cherry
Rhus capallina	shining sumac
Rhus glabra	smooth sumac
Rhus typhina	poison ivy
Robinia pseudo-acacia	staghorn sumac
Sassafra albidum	black locust
Vitis spp.	grapevine

HERBACEOUS PLANTS

Acalpha rhomboidea	three-sided mercury
Achillea millefolium	yarrow
Allium vineale	wild garlic
Amaranthus retroflexus	pigweed
Ambrosia artemisiifolia	common ragweed
Ambrosia trifida	giant ragweed
Andropogon virginicus	broomsedge
Anthemis cotula	mayweed
Arenaria serpylifolia	thyme-leaved sandwort
Asclepias syriaca	common milkweed
Aster vimeneus	small white aster
Barbarea verna	early wintercress
Barbarea vulgaris	common wintercress
Bidens bipinnata	Spanish needles
Bidens frondosa	beggarticks
Bidens polyepsis	tickseed sunflower
Capsella bursa-pastoris	shephard's purse
Cardamine hirsuta	hairy bittercress
Cerastium spp.	mouseear chickweed
Chenapodium album	lamb's quarters
Chrysanthemum leucanthemum	ox-eye daisy
Cichorium intybus	chicory
Commelina communis	Asiatic dayflower
Convolvuliussepium	hedge bindweed
Coronilla varia	crown vetch
Dacus carofa	Queen Anne's lace

DISTURBANCE INDICATORS
(con't.)

Datura stramonium	jimson weed
Digitaria spp.	crabgrass
Diodea teres	buttonweed
Draba verna	whitlow grass
Duchesnea indica	indian strawberry
Erigeron annuus	daisy fleabane
Erigeron canadensis	horseweed
Erodium circutarium	stork's bill
Eupatorium hyssopifolium	hyssop-leaved eupatorium
Euphorbia maculata	milk purslane
Froelichia floridana	cottonweed
Galium aparine	cleavers
Geranium carolinianum	Carolina crane's bill
Hemerocallis fulva	day lilly
Holosteum umbellatum	jagged chickweed
Hypochaeris radicata	cat's ear
Latuca canadensis	wild lettuce
Lamium amplexicaule	henbit
Lamium purpureum	purple head nettle
Lathyrus latifolius	everlasting pea
Lepidium compestra	field cress
Lepidium virginicum	peppergrass
Lespedeza spp.	bush clover
Melilotus alba	white sweet clover
Melilotus officinalis	yellow sweet clover
Mollugo verticillata	carpet-weed
Oenothera biennis	common evening primrose
Oenothera laciniata	cut-leaved evening primrose
Oxalis strica	wood sorrel
Panicum spp.	panic grass
Perilla frutescens	beef steak plant
Phragmites australis	common reed
Phytolacca americana	pokeweed
Potentilla canadensis	common cinquefoil
Potentilla recta	rough-fruited cinquefoil
Prunella vulgaris	heal-all
Ranunculus bulbosus	bulbous buttercup
Rudbeckia hirta	black-eyed susan
Rumex acetocella	sheep sorrel
Rumex crispus	curled dock
Scleranthus annuus	knawel
Setaria spp.	foxtail
Solidago spp.	goldenrod
Solanum carolinensis	horse nettle
Stellaria media	common chickweed
Taraxacum officinale	dandelion
Thlaspi arvense	field pennycress
Trifolium agraricum	hop clover

DISTURBANCE INDICATORS
(con't.)

Trifolium arvense	rabbitfoot clover
Trifolium campestre	hop clover
Trifolium pratense	red clover
Trifolium repens	white clover
Vergascum thapsus	common mullein
Veronica spp.	speedwell
Vicia spp.	vetch

WETLAND INDICATOR PLANTS

WOODY (TREES AND SHRUBS)

Acer rubum	red maple
Alnus serrulata	smooth alder
Baccharis halimifolia	groundsel tree
Betula nigra	river birch
Cephalanthus occidentalis	button bush
Clethra alnifolia	sweet pepperbush
Cornus amonum	silky dogwood
Ilex verticillata	black alder .
Iva frutescens	marsh elder
Leucothoe racemosa	fetterbush
Lindera benzoin	spicebush
Magnolia virginiana	sweet bay magnolia
Nyssa sylvatica	black gum
Rhododendron viscosum	swamp honeys
Rosa palustris	swamp rose
Salix nigra	black willow
Sambucus canadensis	elder

HERBACEOUS PLANTS

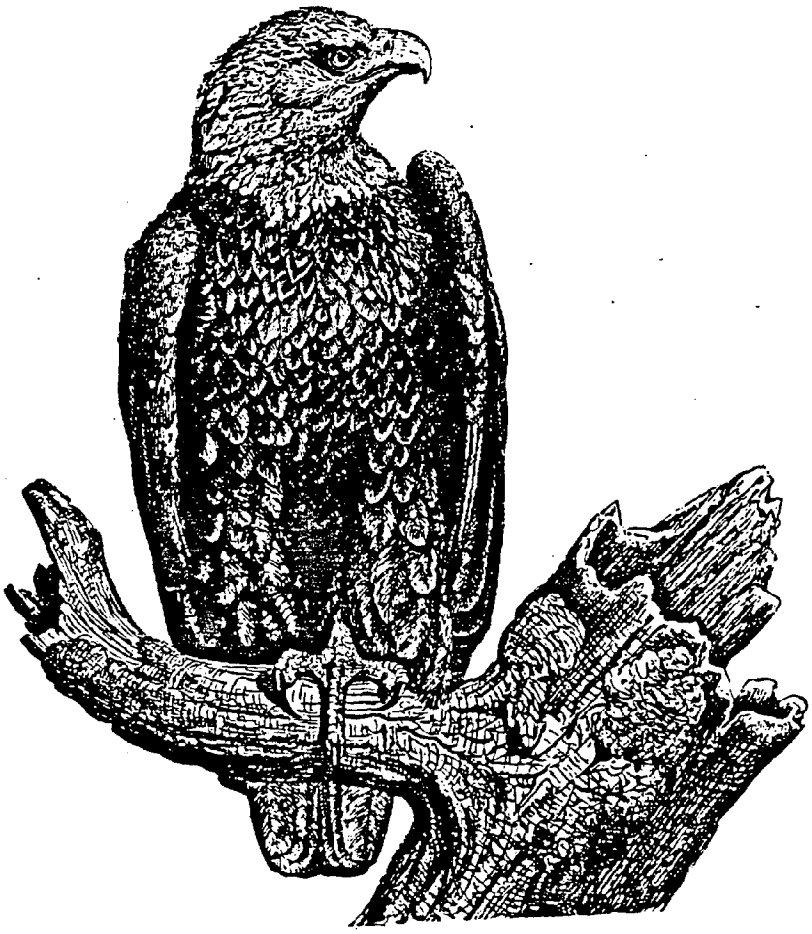
Acnida cannabina	water-hemp
Arisaema triphyllum	jack-in-the-pulpit
Asclepias incarnata	swamp milkweed
Bidens frondosa	beggarticks
Bidens polyepsis	tickseed sunflower
Boehmeria cylindrica	false nettle
Cardamine pennsylvanica	Pennsylvania bittercress
Cyperus esculentus	nutsedge
Decodon verticillatus	swamp-loosestrife
Eupatorium dubium	joe-pye weed
Hibiscus palustris	rose mallow
Hydrocotyle verticillata	whorled water pennywort
Impatiens capensis	jewelweed
Ludwigia alternifolia	seedbox
Lycopus americanus	water-horehound
Mikania scandens	climbing hempweed
Nuphar advena	spatterdock
Onoclea sensibilis	sensitive fern
Osmunda cinnamomea	cinnamon fern
Osmunda regalis	royal fern
Panicum virgatum	switch grass
Peltandra virginica	arrow-arum
Phragmites australis	common reed
Pilea pumila	clearweed
Pluchea purpurascens	salt-marsh fleabane
Polygonum arifolum	halberd-leaved tearthumb

WETLAND INDICATOR PLANTS
(con't)

Polygonum perfoliatum	Japanese tearthumb
Polygonum punctatum	water smartweed
Polygonum sagittatam	arrow-leaved tearthumb
Pontederia cordata	pickerelweed
Saqitarria latifolia	broad-leaved arrowhead
Saururus cernuus	lizard's-tail
Scirpus americanus	three-square
Solidago sempervirens	seaside goldenrod
Spartina alterniflora	salt marsh cordgrass
Spartina patens	salt meadow cordgrass
Symplocarpus foetidus	skunk cabbage
Thelypteris palustris	marsh fern
Typha latifolia	broad-leaved cattail
Woodwardia arreolata	netted chain fern

CHAPTER 6

RARE AND ENDANGERED SPECIES



RARE AND ENDANGERED SPECIES OF ANNE ARUNDEL COUNTY

ANIMALS

Etheostoma vitreum	glassy darter
Fundulus luciae	spotfin killifish
Haliaeetus leucocephalus	bald eagle
Laterallus jamaicensis	black rail
Percina notogramma	stripeback darter
Pituophis melanoleucus	pine snake
Reithrodontomys humulis	harvest mouse
Sorex longirostris	southeastern shrew
Sterna antillarum	least tern

PLANTS

Agalinis setacea	thread-leaved gerardia
Agrimonia microcarpa	small-fruited agrimony
Agrimonia Striata	woodland agrimony
Arabis shortii	Short's rockcress
Ariocaulon septangulare	seven-angled pipewort
Aronia prunifolia	purple chokeberry
Arundinaria gigantea	giant cane
Aster praeltus	willow aster
Athyrium pyncnocarpon	glade fern
Calpogon tuberosus	grass pink
Cardamine douglassii	purple cress
Carex aggregata	
Cares garrattii	Barratt's sedge
Carex bullata	button sedge
Carex Collinsii	Collin's sedge
Carex exilis	coast sedge
Carex Hyalinolpis	
Carex louisianica	
Carex tonsa	
Chamaedaphne calyculata	leathleaf
Corallorhiza wisteriana	Wister's coralroot
Cuscuta coryi	hazel dodder
Cyperus retrofactus	rough cypress
Desmodium laevigatum	smooth tick-trefoil
Desmodium strictum	stiff tick-trefoil
Eleocharis albida	
Elecocharis flavenscens	pale spike-rush
Eleocharis halophila	matted spike-rush
Eleocharis intermedia	
Eleocharis tortillis	twisted spike-rush
Festuca paradoxa	
Fraxinus profunda	pumpkin ash
Galactia voluilis	downy milk pea

RARE AND ENDANGERED SPECIES
(con't.)

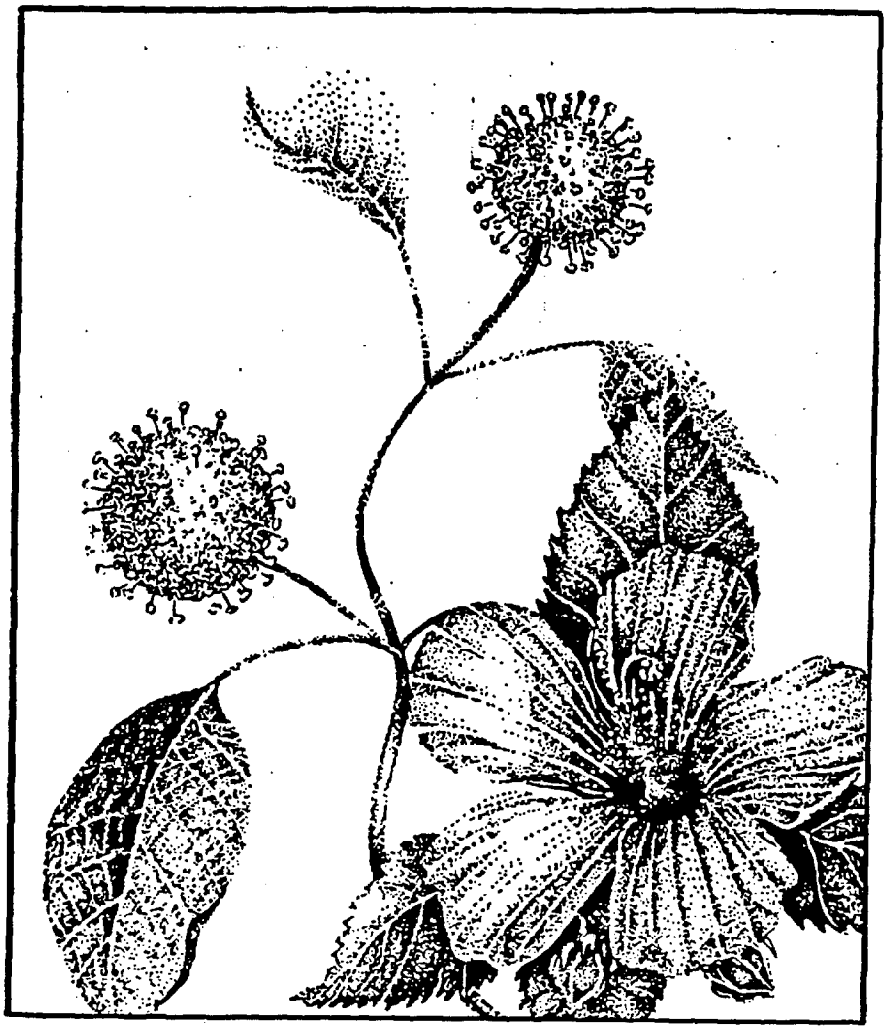
Galium hispidulum	coast bedstraw
Gaylussacia brachycera	box huckleberry
Gentiana villosa	striped gentian
Gymnocladus dioicus	Kentucky coffee tree
Habenaria blephariglottis	white-fringed orchid
Habenaria flava	pale green orchid
Helianthemum bicknellii	hoary frostweek
Helonias bullata	swamp pink
Hepatica acutiloba	sharplobe hepatica
Hexalectris spicata	crested coralroot
Hydrocotyl verticillata	whorled water-pennywort
Iris verna	dwarf iris
Juncus caesaariensis	New Jersey rush
Juncus pelocarpus	brown-fruited rush
Kirgia dandelion	potato dandelion
Leptochloa fascicularis	long-awned diplachne
Leptoloma cognatum	fall witch-grass
Lespedeza angustifolia	narrow-leaved bush clover
Lespedeza Nuttallii	Nuttall's bushclover
Limonium nashii	Nash's sea lavender
Listera australis	southern twayblade
Lygodium palmatum	climbing fern
Matelea carolinensis	anglepod
Matelea obliqua	
Monotropis odorata	sweet pinesap
Panicum commonianum	Common's panic grass
Pluchea camphorata	marsh fleabane
Polygonum ramossissimum	bushy knotweed
Polygonum robustius	
Porzana carolina	sora
Potamogeton perfoliatus	clasping-leaved pondweed
Potamogeton richardsonii	redhead grass
Potamogeton spirillus	spiral pondweed
Puccinellia pallida	pale mannagrass
Pyrola secunda	one-sided pyrola
Rhynchospora cephalantha	capitate beakrush
Rhynchospora chalrocephala	northern pitcherplant
Schwalbea americana	chaffseed
Scirpus smithii	Smith's clubrush
Scirpus subterminalis	water clubrush
Senecio anonymus	Small's ragwort
Smilax pseudo-China	halberd-leaved greenbriar
Solidago hispida	hairy goldenrod
Solidago rigida	hard-leaved goldenrod
Solidago speciosa	showy goldenrod
Sporobolus asper	long-leaved rushrgrass
Stenanthium gramineum	featherbells
Thalictrum dasycarpum	purple meadowrue

RARE AND ENDANGERED SPECIES
(con't.)

Thelpyteris simulata	bog fern
Trachelospermum difforme	climbing dogbane
Triadenum tubulosum	
Trichostema setaceum	narrow-leaved bluecurls
Triosteum angustifolium	narrow-leaved horse gentian
Utricularia biflora	two-flowered bladderwort
Utricularia cornuta	horned bladderwort
Utricularia fibrosa	fibrous bladderwort
Utricularia geminiscarpa	hidden-fruit bladderwort
Viola septenionalis	northern blue violet
Vitis cinerea	graybark

CHAPTER 7

SHRUBS AND TREES FOR WILDLIFE HABITAT



ENVIRONMENTAL CONCERN, INC.

SHRUBS

Aronia arbutifolia — RED CHOKEBERRY

Height: 2-8 ft.

Landscaping: Will grow in wet or dry soils, and in sun to partial shade. Purple or white flowers spring to early summer. Fall color rich red to orange. Some salt tolerance.

Wildlife use: Because berries persist into winter, it provides good emergency food for birds. Fruits preferred by bobwhite, brown thrasher, cedar waxwing, and eastern meadowlark.

Cephalanthus occidentalis — BUTTONBUSH

Height: 6-12 ft.

Landscaping: Will grow in freshwater to 3 ft. in depth which makes it especially suited for pond planting. Under cultivation it can tolerate drier conditions and can be used as an upland shrub. Grows in full sun to partial shade. White pompom-like flowers in July-August.

Wildlife use: Nutlet produces seed favored by mallard, wigeon, shoveller, wood duck, and teals. Used for nesting by Virginia rail and red-winged blackbird. Nectar is used by ruby-throated hummingbird.

Cornus amomum / *Cornus Racemosa* — SILKY DOGWOOD / GRAYSTEM DOGWOOD

Height: Silky 4-10 ft., Graystem 8-12 ft.

Landscaping: Both species have fair drought tolerance and will tolerate partial shade. While Silky will tolerate poorly drained conditions better than Graystem, both adapt to a wide range of soil conditions. Silky grows as a many-stemmed shrub, autumn color is purple to red, berries bluish. Autumn color of Graystem is dull red, berries white. Both can be used in hedgerows or as single ornamental shrubs.

Wildlife use: Over 15 species of birds use the fruit. It is a preferred fruit of the downy woodpecker, cedar waxwing, common flicker, and eastern bluebird. For the gray catbird, it also provides cover and preferred nesting.

Cornus stolonifera — RED-OSIER DOGWOOD

Height: 4-8 ft.

Landscaping: Commonly found in wet areas so it is ideal for planting around ponds or in low areas of lawns. It can also tolerate drier conditions. Will grow in partial shade. Bright red stems in fall-winter distinguish it from other shrubs. Autumn color of leaves: dark red, berries white drupes.

Wildlife use: Favored as a food by 15 species of songbirds. It is preferred nesting site for goldfinch.

Elaeagnus umbellata — AUTUMN OLIVE

Height: 10-12 ft.

Landscaping: Prefers well-drained soil and full sun. Since roots fix nitrogen, its good for infertile soil. Attractive as single shrub but is particularly good for hedgerow since it grows rapidly. Autumn color: silver-green; berries reddish-brown.

Wildlife use: Over 25 species of songbirds love its fruit including cardinal, eastern bluebird, cedar waxwing, hermit thrush, mockingbird, and catbird. It is also popular with upland game for food and cover.

Ilex verticillata — WINTERBERRY

Height: 8-10 ft.

Landscaping: Grows well near ponds or in low wet areas; has some drought tolerance. Prefers sun to partial shade. It will grow better if not used in hedgerow with aggressive competitors. Male and female plants are necessary for berry production.

Wildlife use: Because it holds its berries long into winter, it is an excellent source of food for birds late into the year. Although not as popular as some berry shrubs, it is used by mockingbird, catbird, brown thrasher, and hermit thrush.

Lindera benzoin — COMMON SPICEBUSH

Height: 12-25 ft.

Landscaping: Prefers fertile, moist soil. Will grow well in sun or shade. Clusters of small greenish-yellow flowers bloom early in spring before shrub leafs out. Can be used in borders, as understory planting, or singly in a garden. Male and female plants are needed for berry production.

Wildlife use: Fruit is enjoyed by many songbirds including eastern kingbird, wood thrush, hermit thrush, veery, and red-eyed vireo.

Lonicera maacki / *Lonicera tatarica* — RED AMUR HONEYSUCKLE / TATARIAN HONEYSUCKLE

Height: Red Amur 8-12 ft., Tatarian 6-9 ft.

Landscaping: Both species tolerate drought, however, Red Amur does better in moist conditions and can also tolerate partial shade. Tatarian has some salt tolerance. Both species are excellent in hedgerows.

Wildlife use: Tatarian produces fruit before the Red Amur and provides summer feeding for over 20 species of birds. Red Amur is an especially valuable late season plant since it holds its berries through the fall. It is a preferred fruit of catbird, robin, and goldfinch. Many species use honeysuckle for cover and nesting including: mockingbird, catbird, and brown thrasher.

Myrica pensylvanica — BAYBERRY

Height: 3-8 ft.

Landscaping: A very versatile shrub which will grow in moist, dry or sandy soil. Roots fix nitrogen so it is good for infertile soil. Has some salt tolerance, which makes it a desirable plant for seaside landscaping. Male and female plants are necessary for berry production. Autumn color: dark green to bronze; berries waxy gray. Persistant berries last well into winter. It is used by red-winged blackbird for nesting and cover. Fruit is eaten by over 25 species of songbirds including eastern meadowlark, white-eyed vireo, yellow-rumped warbler, and tree swallow.

Wildlife use:

Sambucus canadensis — ELDERBERRY

Height: 8-12 ft.

Landscaping: Will tolerate both moist and dry conditions. Has some salt tolerance. Although it reaches its best growth in full sunlight, it can tolerate partial shade. Can be used as hedgerow, background, or as a single shrub. Flowers in spring are white, Autumn color: greenish-yellow; berries purple. Annual pruning of canes improves fruit production.

Wildlife use: Fruit disappears by early fall, it is eaten by over 30 species of songbirds. It is a preferred fruit of the red-bellied woodpecker, several species of thrushes, cedar waxwing, eastern bluebird, veery, rose-breasted grosbeak, and rufous-sided towhee. 25 species of upland game, game birds, and songbirds use it for cover. The goldfinch and yellow warbler use it for nesting

Vaccinium corymbosum — HIGHBUSH BLUEBERRY

Height: 6-15 ft.

Landscaping: Will grow in wet areas but has some drought tolerance. Prefers sun to partial shade and slightly acid soil. A slow growing compact shrub that is attractive as border plant or single ornamental. Flowers small pink bell shape in spring. Autumn color: bronze to crimson; berries bluish-white.

Wildlife use: One of the most popular berry shrubs for birds. Berries are quickly eaten as developed in summer months. It is preferred food of eastern bluebird, orchard oriole, rufous-sided towhee, brown thrasher, tufted titmouse, and several upland gamebirds. Plant parts are eaten by red fox, skunk, deer, chipmunk and mice.

Viburnum dentatum / *Viburnum lentago* — ARROWWOOD / NANNYBERRY

Height: Arrowwood 10-15 ft., Nannyberry 10-20 ft.

Landscaping: Both species grow in wet, low areas in sun to partial shade. Nannyberry can also tolerate full shade. Arrowwood's upright stems form an inpenetrable hedgerow. Nannyberry can be treated as a small tree in a garden setting.

Wildlife use: Dark blue fruits of both are eaten in fall by many species of songbirds including cedar waxwing, eastern bluebird, brown thrasher, and rose-breasted grosbeak. Berries are also eaten by small mammals.

Viburnum opulus
Viburnum trilobum

EUROPEAN CRANBERRYBUSH
AMERICAN CRANBERRYBUSH

Height: Both species 6-12 ft.

Landscaping: Prefers full sun to partial shade. Both do well in poorly drained soil. An attractive year-round shrub excellent for hedgerows, in clumps, or singly. White flowers in spring form beautiful large flat clusters. Autumn color: reddish-brown; berries reddish-orange.

Wildlife use: Not a preferred fruit of any one species, but berries persist through the winter and provide emergency food for over 25 species of birds, and several small mammals.

TREES

Acer rubrum
Acer saccharinum

RED MAPLE
SILVER MAPLE

Height: Both species 60-70 ft.

Landscaping: Both trees are fairly rapid growers and can adapt to wet or dry areas. Silver maple is subject to wind damage and is best kept away from building structures. Red maple is the hardier of the two species. Both have good fall color but the red maple is outstanding.

Wildlife use: Seeds are eaten by bobwhite, cardinal, and pine siskin. Evening grosbeak likes the buds as well as seeds. American goldfinch uses both species for cover and nesting. Silver maple is used by northern oriole for nesting and red maple by yellow-bellied sapsucker for sap.

Amelanchier canadensis

SHADBUSH/SERVICEBERRY

Height: 15-20 ft.

Landscaping: Grows in moist conditions. Prefers partial shade. An excellent shrub/small tree to plant in naturalistic setting with other trees. Beautiful early spring white flowers. Autumn color: deep orange to rusty red; berries dark purple.

Wildlife use: Over 25 species of songbirds use the small applelike purple fruit. Tree also used for nesting and cover by robin, wood thrush, hermit thrush, and eastern kingbird.

Cornus florida

FLOWERING DOGWOOD

Height: 15-25 ft.

Landscaping: Prefers rich, moist sites but will grow in well drained soil; fair drought tolerance. Can tolerate partial shade. One of the finest ornamentals for providing aesthetic qualities in all seasons.

Wildlife use: Although not popular for cover or nesting, it is used as food source by over 35 species of birds. It is preferred fruit of woodpeckers: red-bellied, pileated, hairy, and yellow-bellied sapsucker; 4 species of thrush, eastern bluebird, cardinal, summer tanager, and evening grosbeak.

Crataegus spp. HAWTHORN

Height: 10-30 ft.

Landscaping: Prefers well-drained soil but can tolerate some moisture. Prefers sun to partial shade. Because of its thorny nature, it should not be planted in areas frequented by people. It also should not be planted near eastern red cedar which is an alternate host of two destructive rusts. Some salt tolerance.

Wildlife use: Thorniness, dense branching, and heavy foliage make it a favorite nesting site of many birds including mockingbird, cardinal, willow flycatcher, and brown thrasher. Although the appeal of its fruit is limited, it is preferred food of ruffed grouse, cedar waxwing, and fox sparrow. Since the fruit lasts well into winter, it offers emergency food to other birds including wood duck, bobwhite, and evening grosbeak.

Diospyros virginiana COMMON PERSIMMON

Height: 30-50 ft.

Landscaping: Prefers sun to partial shade. Useful as an ornamental tree in a garden setting. Can tolerate moist conditions and also has some salt tolerance.

Wildlife use: Fruit is preferred by mockingbird, catbird, and cedar waxwing, as well as deer, fox, raccoon, skunk, and opposum.

Fraxinus pennsylvanica GREEN ASH

Height: 30-50 ft.

Landscaping: Prefers full sun. Is adaptable to both wet and dry conditions. A rapid growing tree with attractive shape and dense foliage. Male and female flowers on separate trees.

Wildlife use: Seeds are preferred food of wood duck, bobwhite, cardinal, evening grosbeak, purple finch, and pine grosbeak. Tree provides cover and nesting for mourning dove and evening grosbeak.

Ilex opaca AMERICAN HOLLY

Height: 30-40 ft.

Landscaping: This holly does well in poorly drained soil; it also has some drought tolerance. Although it will grow in sun, it prefers partial shade. A highly ornamental tree, good for both naturalistic and formal landscaping. Has some salt tolerance. Male and female plants are necessary for berry production.

Wildlife use: It is used by over 10 species of songbirds for food and cover, and 4 species for nesting: cardinal, robin, mockingbird, and catbird. Its berry is a preferred fruit of eastern bluebird and cedar waxwing.

Liquidambar styraciflua SWEETGUM

Height: 50-100 ft.

Landscaping: Upright, straight ornamental tree, good for producing shade. Prefers moist, rich soil but can tolerate drier conditions. Has some salt tolerance. Easily transplanted, moderate growth rate. Autumn color: brilliant yellow.

Wildlife use: Seeds are not readily accessible to all birds but is preferred food of the sparrow, purple finch, goldfinch, junco, redpoll, and pine siskin.

Malus spp. CRABAPPLE

Height: 15-25 ft.

Landscaping: Can tolerate some moist conditions but also has good drought tolerance. Prefers sun to partial shade. An extremely ornamental tree good for both formal and naturalistic landscaping. Fruits vary in size from ¼-2 in. and color from red to yellows. Attractive white, pink and red flowers in May.

Wildlife use: A wide variety of uses by many birds makes crabapple an extremely valuable source of fruit, buds, seeds, sap, and nectar for food while providing cover and nesting both open and cavity, for over 13 species of birds. The ruby-throated hummingbird uses crabapple for nectar, cover and nesting, while orchard and northern oriole eat the fruit in addition to nesting and cover.

Nyssa sylvatica BLACKGUM

Height: 30-60 ft.

Landscaping: Grows best in moist, rich soil but can tolerate drier conditions. Prefers sun to partial shade. Growth rate moderate. Transplants best as a small tree. Very effective as an ornamental: single straight trunk with horizontal branches becomes gnarled with age. Autumn color: shades of brilliant red. Male and female flowers on separate plants.

Wildlife use: Fruits preferred by many birds, especially thrushes and woodpeckers. In wetland areas trees are perching site for egrets, herons; raccoons and owls live in hollow trunks.

Pinus taeda LOBLOLLY PINE

Height: 90 ft. inland, 15-50 ft. along seacoast

Landscaping: Particularly good for moist areas and along coastal areas where it can withstand salt spray. Prefers sun to partial shade.

Wildlife use: Used by great blue and black-crowned night herons as rookeries and roosting sites. Seeds eaten by squirrels and some birds.

Prunus virginiana — CHOKECHERRY

Height: 6-20 ft.

Landscaping: Tolerates many kinds of soil conditions, but does best in well drained, moist soils. Prefers full sun. It is good for naturalistic plantings where dropped fruit is not a problem. Flowers white, fragrant clusters in early spring. Autumn color: deep bronze to yellow; fruits purplish-black. Frequently inhabited by webworms.

Wildlife use: Although not popular for nesting or cover, fruit is preferred food of 19 species of songbirds including rose-breasted and evening grosbeak, cedar waxwing, eastern bluebird, yellow-bellied sapsucker, pileated woodpecker, and 4 species of thrushes. Also cherry is eaten by fox, raccoon, squirrel, and chipmunk.

Quercus palustris — PIN OAK
Quercus phellos — WILLOW OAK

Height: Pin oak 50-70 ft., willow oak 70-90 ft.

Landscaping: Both species tolerate wet conditions. Pin oak is symmetrical and relatively fast-growing for an oak, a good tree for small spaces. Willow is more asymmetrical and better suited for more open spaces. Both prefer sun to partial shade.

Wildlife use: The comparatively small acorns of pin and willow oaks make them a favorite food of ducks, especially wood ducks and mallards. They are also eaten by quail and wild turkey. Both are a source of food for 6 species of woodpecker and used for nesting and cover by northern oriole, scarlet tanager, and rose-breasted grosbeak. Supplementary food for deer, fox, opossum, and raccoon.

Taxodium distichum — BALD CYPRESS

Height: 100-120 ft.

Landscaping: Especially good for wet areas. Prefers full sun. A deciduous conifer which looses its needles in winter.

Wildlife use: Very little food value, but it is a good perching site for herons, egrets, and other water birds. Wood ducks nest in hollow trunks.

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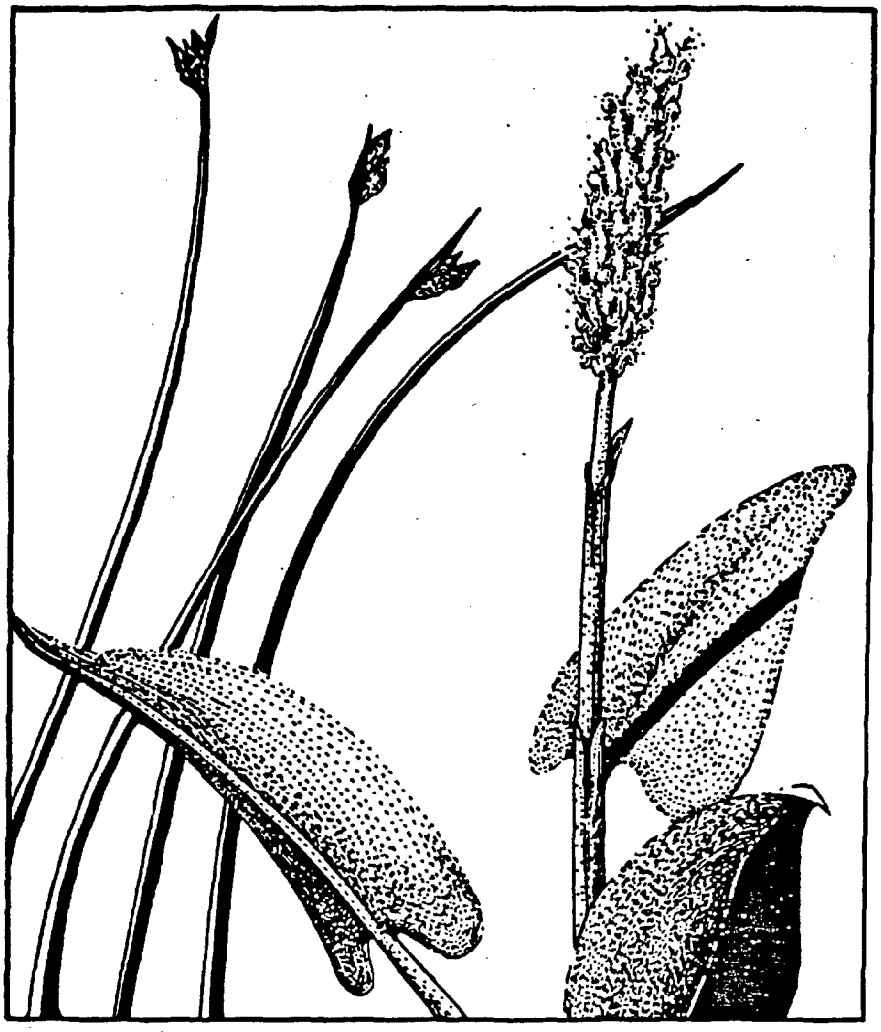
Other plants are available upon request.

CHAPTER 8

PLANTS FOR LANDSCAPING SHORE, PONDS AND OTHER WET AREAS



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Acorus calamus — SWEET FLAG

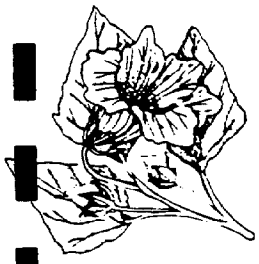
Height: 2-3 ft.
Habitat: Freshwater up to 3 in. and near mean high tide.
Landscaping: Prefers sun; can tolerate partial shade. A clumping plant which does not spread rapidly. Leaves similar in appearance to iris but flower inconspicuous spadix along stem. Can tolerate periods of dryness. Good for pond edges.
Wildlife use: Limited.

Andropogon virginicus — BROOM SEDGE

Height: 2-3 ft.
Habitat: An upland grass which tolerates seasonally flooded areas.
Landscaping: Not a true sedge but a clumping grass which tolerates moderate salinity and partial shade. Flowers are tucked inside leaves, seeds appear feathery. Of particular interest for naturalistic landscaping and plantings around wildlife ponds.
Wildlife use: During winter months when other food is not available, seeds are source of nourishment for upland game and many songbirds. Stems remain upright in winter and provide excellent cover.

Cephalanthus occidentalis — BUTTONBUSH

Height: 6-12 ft.
Habitat: Freshwater up to 3 ft. and near mean high tide.
Landscaping: Although this shrub is usually found in wet areas, under cultivation it can tolerate drier conditions. Grows in full sun to partial shade. Extremely attractive white pompom-like flowers in July and August.
Wildlife use: Nutlet produces seed favored by mallard, wigeon, shoveller, wood duck, and teals. Used for nesting by Virginia rail and red-winged blackbird. Nectar is a preferred food of ruby-throated hummingbird.



Hibiscus moscheutos — MARSH HIBISCUS

Height: 4-7 ft.
Habitat: Fresh to brackish water up to 3 in. and near mean high tide.
Landscaping: Requires full sun for good flowers. Will grow on upland areas as well as low, wet places. Can tolerate periods of dryness. An upright plant with large showy flowers (pink or white with red centers) blooming in late July-August.
Wildlife use: Limited. Nectar used by ruby-throated hummingbird.

Iris pseudacorus
Iris versicolor

YELLOW WATER IRIS
BLUE FLAG

Height: 2-3 ft.
Habitat: Freshwater up to 3 in.
Landscaping: Requires full sun for good flowers but tolerates partial shade. A clumping plant which does not spread rapidly. Used primarily for ornamental pond display. Flowers in late spring.
Wildlife use: Limited.

Leersia oryzoides

RICE CUTGRASS

Height: 1-3 ft.
Habitat: Freshwater up to 3 in. and near mean high tide.
Landscaping: Prefers full sun. Will tolerate periods of dryness. It's flowering seed heads create a delicate pond edging. During the flowering season, late July-September, panicles are noticeable yellow-green. This grass is of particular value for shore erosion control in freshwater areas.
Wildlife use: The rice-like seeds are a favorite of at least 14 species of wildlife including 6 species of ducks, also marshbirds, shorebirds, and some songbirds. Although grass does not remain upright during winter months, it provides cover and nesting for birds and small mammals during summer months.

Panicum virgatum

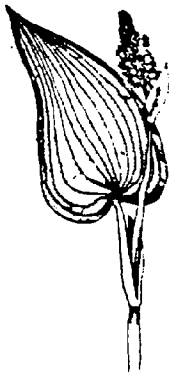
SWITCHGRASS

Height: 2-4 ft.
Habitat: Fresh to brackish water in areas that are periodically wet, and above mean high tide.
Landscaping: Prefers full sun. Planted near pond's edge, it can tolerate both wet and dry conditions. A clumping grass which does not spread rapidly. Particularly attractive in winter when its brown stems remain upright. Flowers are inconspicuous but form delicately branched panicles.
Wildlife use: Seeds are an important source of food for many ground feeding songbirds and gamebirds (over 30 species) as well as waterfowl, marshbirds, shorebirds, and small mammals. Because of upright stems and leaves throughout the winter, it provides excellent cover year around.

Peltandra virginica

ARROW ARUM

Height: 2-3 ft.
Habitat: Freshwater up to 1 ft. and near mid-tide.
Landscaping: Full sun to partial shade. A heart-shaped broadleaf clumping plant which does not spread rapidly. Flower is unshowy and green found beneath the leaf. Because of plant's statuesque appearance it is an attractive accent plant in a pond.
Wildlife use: The berry-like seed is relished by wood ducks.



Pontederia cordata — PICKERELWEED

Height: 2-3 ft.
Habitat: Freshwater up to 1 ft. and near mid-tide.
Landscaping: Full sun to partial shade. A slow spreading heart-shaped broadleaf plant. Flowers are bright blue spires blooming May to October. Recommended for color accent in pond plantings.
Wildlife use: Seeds of some interest to black and wood ducks.

Sagittaria latifolia — DUCK POTATO

Height: 1-3 ft.
Habitat: Freshwater up to 1 ft. and near mid-tide.
Landscaping: Full sun to partial shade. A rapid spreading arrow-shaped broadleafed plant. Flowers mid-summer, single stalk of attractive white flowers with yellow centers.
Wildlife use: Although seeds are eaten by ducks and shore birds, the most valuable part to waterfowl is the underground tuber (potato) which is favored by 15 species including canvasback.

Saururus cernuus — LIZARD'S TAIL

Height: 2-3 ft.
Habitat: Freshwater up to 1 ft. and near mid-tide.
Landscaping: Especially adaptable to shade; flowers in full sun to full shade. A rapid spreading heart-shaped broadleafed plant. Flowers mid-summer with attractive nodding white spikes resembling a lizard's tail.
Wildlife use: Seeds of some value to wood ducks but overall value not great.

Scirpus americanus — COMMON THREESQUARE

Height: 2-4 ft.
Habitat: Fresh to brackish water up to 1 ft. and between mid-tide to mean high tide.
Landscaping: Prefers full sun. A rapid spreading sedge with triangular stems and inconspicuous basal leaves. Tolerates periods of dryness. Flowers create seed-head near end of stem. Attractive edging for pond. Of value for shore erosion control in freshwater areas.
Wildlife use: The hard-coated seeds are one of the most important and commonly used foods of over 30 species of ducks, marshbirds, and songbirds. The stems and rhizomes are eaten by muskrats and geese. During the summer the upright stems provide cover and nesting for waterfowl, marsh wrens, and red-winged blackbirds.

Scirpus validus

SOFT STEM BULRUSH

Height: 6-10 ft.

Habitat: Fresh to brackish water up to 1 ft. and near mid-tide.

Landscaping: Requires full sun for dense growth. A rapid spreading rush with cylindrical stems and no apparent leaves. Seed heads in drooping clusters near end of stem. A good edging for waterfowl ponds.

Wildlife use: Seeds eaten by some marsh and shorebirds. Plants provide good cover and nesting for marsh wren and red-winged blackbird.

Spartina alterniflora

CORDGRASS

Height: 4-7 ft.

Habitat: Intertidal zone of saltwater and brackish water tidal areas. Mean high tide to mid-tide.

Landscaping: Requires full sun for dense growth. Spreads rapidly by rhizome. Of particular value in shore erosion control for saltwater areas. Flowers in August are inconspicuous.

Wildlife use: Seeds are eaten by marshbirds and 2 species of songbirds: seaside and sharp-tailed sparrows; also by black duck. Rhizomes are important for muskrats and geese.

Spartina patens

SALTMARSH HAY

Height: 1-3 ft.

Habitat: Zone just above mean high tide in saltwater and brackish water areas.

Landscaping: Requires full sun for dense growth. Spreads slowly by rhizome. Good for shore erosion control in saltwater areas.

Wildlife use: Not significant.

Zizania aquatica

WILD RICE

Height: 6-10 ft.

Habitat: Freshwater up to 1 ft. and near mid-tide.

Landscaping: An annual grass. Prefers full sun. Flowers are inconspicuous. An excellent plant for waterfowl ponds.

Wildlife use: A highly valued food for ducks and geese; also favored by red-winged blackbird, rail, and bobolink.

ADDITIONAL PLANTS

The following plants although not high in wildlife value do offer diversity and color for landscaping in and around wet areas.

Bidens connata - BEGGAR'S TICK, an annual, blooming late in summer with yellow daisy-like flower.

Eupatorium maculatum - JOE-PYE-WEED, blooms late in summer with purple flat-topped clusters of small flowers.

Lobelia cardinalis - RED CARDINAL FLOWER, blooms in July and August. Scarlet flowers in long spikes attracts ruby-throated hummingbird.

Sagittaria falcata - BULTONGUE, similar to Sagittaria latifolia in flower, leaves more elongated.

Solidago sempervirens - SEASIDE GOLDENROD, golden flowers in late summer. One of the few flowering plants that does well in seashore areas.

Spartina cynosuroides - BIG CORDGRASS, can be used for shore erosion control in freshwater to brackish water areas.

Typha angustifolia - NARROW-LEAVED CATTAIL, brackish to freshwater.

Typha latifolia - BROAD-LEAVED CATTAIL for use in freshwater areas.

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